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Havok's Project Anarchy is challenging Unity and UDK.
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EDITORIAL

A CLOSER LOOK

HERE IN THE UK, the games development sector is suddenly under increased scrutiny, and it's not from the usual culprits.

Those devoted to blaming games for violence haven't been twitching their curtains as our industry works across the street. Rather, it's been government bodies and European officials that have had their eye on games development.

Days apart in April, news emerged that the UK's Office of Fair Trading would be scrutinising free-to-play business ethics, and that the European Commission is looking to investigate the case for introducing tax breaks for the United Kingdom's developers. You can read all the details on www.develop-online.net, of course.

Such scrutiny is to be expected. It's starting to happen globally, and in many ways, it's a compliment to our sector's ever-increasing cultural standing and economic status.

But unless we can prove to those watchful eyes that we can self-regulate effectively, we might begin to lose the choice of monitoring and policing our own business. And I worry that reality could be potentially detrimental to the freedom of games developers. It's right the OFT should check that IAP games aren't exploiting youngsters, it's vital that we cooperate with the age ratings system. Working with government and other authorities is essential.

However, we need to be sure that control stays in our hands and regulation does not spiral into something unworkable.

Self-regulation and responsible business practice should do it.



Will Freeman

will.freeman@intentmedia.co.uk

Will

develop iPad

Videos are available within the iPad Edition of **Develop** on iTunes and the Browser-based Digital Edition, which can be accessed at develop-online.net



THIS MONTH: Havok's Project Anarchy Inside Luxology's Modo 701
Epic's Blueprint technology

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Havok's big play for small teams

High-profile tools outfit targets mobile and indie devs with Project Anarchy platform ● Havok Physics 2013 detailed



by Will Freeman

IRELAND-HEADQUARTERED TOOLS outfit Havok used this year's GDC to launch a new development engine and environment named Project Anarchy, which targets mobile and small studio users.

Develop has since met with Havok to better understand the technology and its ambitions, and learn more about what is included.

Project Anarchy itself presents developers with a wide-ranging toolset centered around a version of Havok's Vision Engine, the middleware firm's flagship engine that uses an object-oriented C++ API and can be extended a customised at will. Also included are significant elements of the company's Physics, AI and Animation Studio tools, all prolifically used in the triple-A space.

Those technologies are combined in a toolkit that offers exporters for Autodesk's 3ds Max and Maya, and a full WYSIWYG editor.

"We're going to release it to the mobile community soon," confirmed Havok managing director David Coghlan, speaking with *Develop*. "We're going to make it freely available for mobile developers to download, which means they can get hands on with the physics technology used in *Uncharted*, the AI

technology used in *Halo* and the animation technology used in *Skyrim*. We think it's very exciting for those developers."

FREE AND EASY

Access to download and use Project Anarchy will be free of charge. More significantly, Havok will also allow developers to release finished Project Anarchy products on Android and iOS for no fee at all, giving the tech its most noteworthy and unconventional feature, in contrast to other platforms that are free to use until a game ships. While some charges will be introduced for distribution to other platforms, and occasional co-marketing obligations may be instated, Havok asserts that there will be no hidden costs, no obscure royalty payment systems and no crippleware buried within Project Anarchy.

"Developers are going to be able to download the entire development environment, and actually bring out games on iOS and Android, and ship those games for free," said Coghlan. "And there's no strings attached, and that's independent of company size or revenue or anything like that."

The last ten years has seen free and accessible development toolsets and engines

prosper, but to allowing studios the unrestricted ability to release to two platforms like iOS and Android, in tandem with offering access to renowned middleware technologies like Havok's Physics solution, arguably gives Project Anarchy a fighting chance in a crowded space.

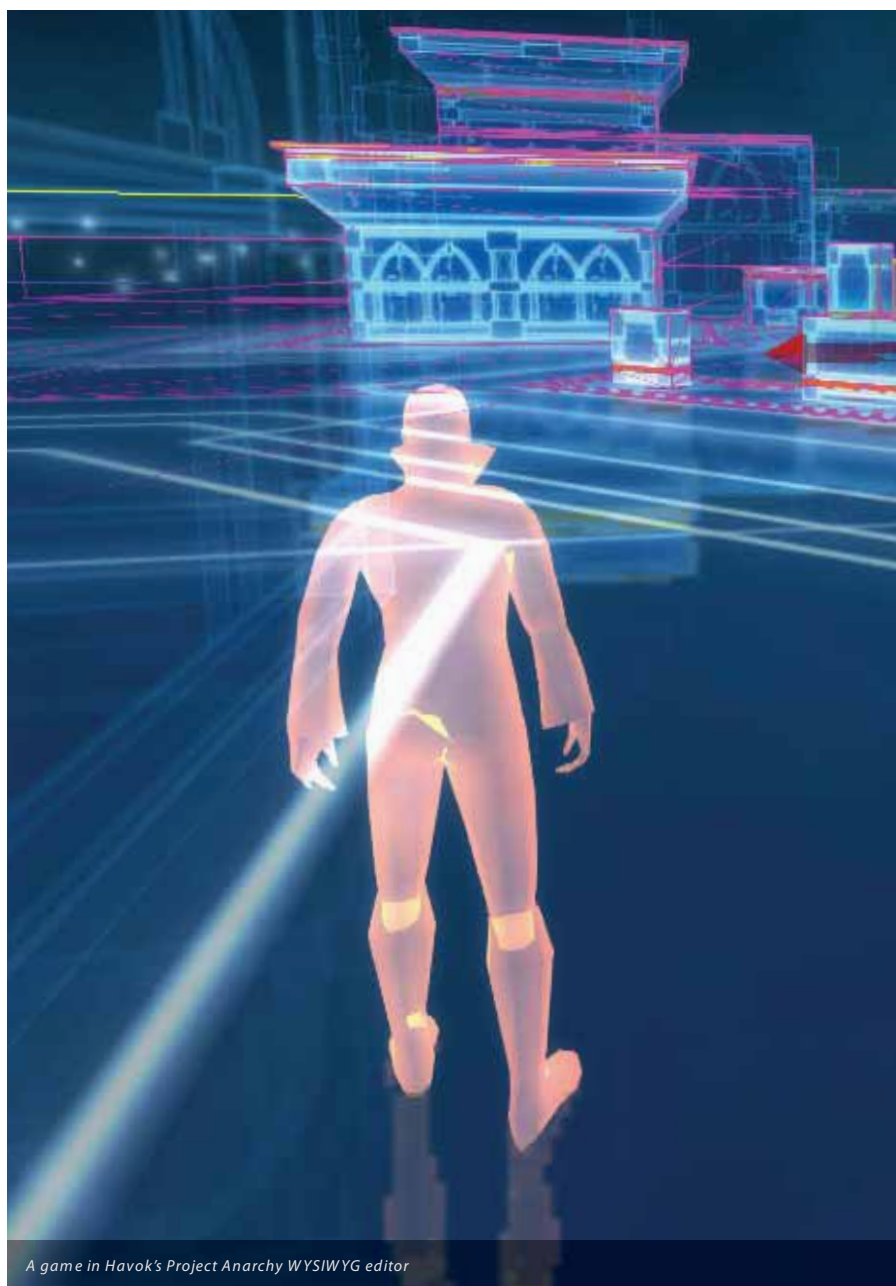
And for developers unsure about committing to Project Anarchy – particularly with other options like Unity and Epic's Unreal Development Kit available and established – Havok is intent on highlighting its forthcoming platform's strengths.

"There's a few clear reasons to chose Project Anarchy," stated Coghlan. "One is that it is a very flexible C++ development environment, so that will have a huge appeal. We also expose an awful lot of the source available to allow people to get in there to customise and create plug-ins and build extensions. They can rewrite the renderer if they want, and we provide that level of assistance with the source."

"We think [the availability of existing accessible games development tools is] great to see, and the market has responded really well to having these kinds of choices more readily available," added Ross O'Dwyer,



Top-to-bottom: David Coghlan and Joel Van Eenwyk of Havok. Main: The 'RPG demo' bundled with Project Anarchy



A game in Havok's Project Anarchy WYSIWYG editor

worldwide head of developer support at Havok. "We're seeing though, that the market is looking for broader, more flexible tools where the ramp up time might be a little higher, but the payoff such tools offer in terms of new and uncharted gamer experienced is huge."

“We feel that if we put our tech into that group of people, it's going to be a good thing for the development community.”

David Coghlan, Havok

FLEXING ITS MUSCLE

Built as it is around Havok's long serving console tech, and conceived in response to increasing mobile processing power, Project Anarchy has a natural leaning towards the creation of 3D games, but will, its creators say, be adaptable enough for the crafting of all kinds of atypical gaming forms, as well as 2D physics-lead titles.

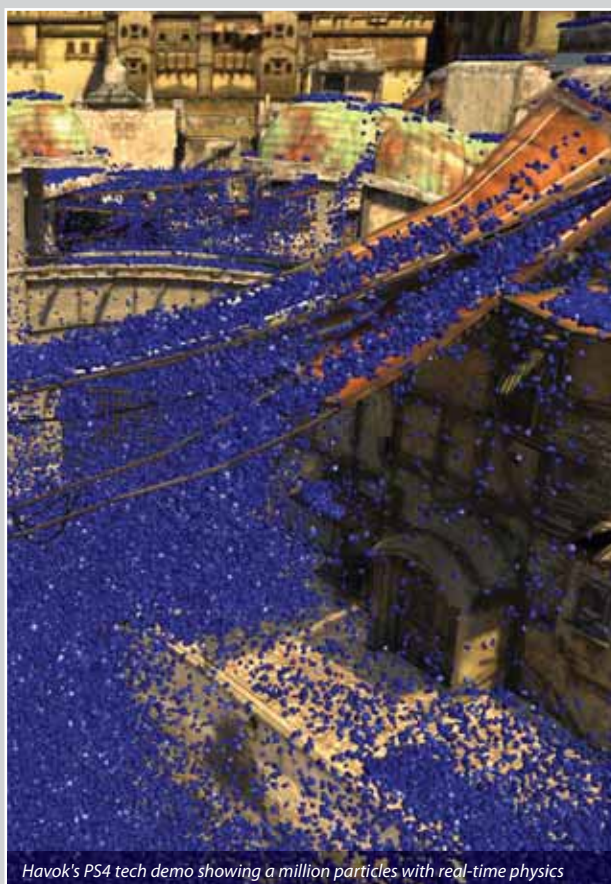
Delving deeper into Project Anarchy's technological foundation, it appears that an emphasis on flexibility is at its core. All source code will be made available within the engine, and Havok is keen to emphasise the importance of C++ as a basis for customising the technology as a key differentiator, in contrast to other extension-friendly development solutions.

"[C++] is the language that triple-A games are developed in," said O'Dwyer. "It's also the language that allows you to get low level hardware access and really tap the performance of the devices you're running your games on."

C++, of course, has the potential to stand as an intimidating language for some of the smaller studio's Project Anarchy is set to serve, but Havok insists it has that covered too.

"We have scripting in Lua available as well," Joel Van Eenwyk, field application engineer at Havok told *Develop*. "And this is a component based, plug-in based system where you can actually play games inside the editor. For the community that's huge. It's well optimised and you can still do the C++, which is what games industry professionals typically use. It's very exciting, and we really want people to ►

LET'S GET PHYSICS



Havok's PS4 tech demo showing a million particles with real-time physics

WHILE HAVOK USED GDC primarily as a launch pad for its Project Anarchy mobile development platform, earlier in the same month it announced that the next full reworking of its famed Physics solution is now underway.

"A number of years ago we took a clear look at what we had, which was the leading physics engine on the market, but our engineers felt that knowing what they know now about CPU architecture and where that was going to go in the next few years, given the chance to start from scratch they could do an even better job," said Havok managing director David Coghlan, speaking with *Develop*.

"When our engineers tell us they can do something like that, we're inclined to give them the leeway, and they've really done a phenomenal job with this."

The result is a new physics-focused core from Havok, due out this Spring.

"It will essentially be an awful lot faster and use an awful lot less performance than today's Havok Physics, which even by today's standards remains a powerful offering," stated Coghlan.

"Havok 2 was really our big break into even the consumer's awareness around the time of *Half-Life 2*. There was a huge buzz around that,

and this is really the next generation of that. It's the next truly big step forward since then, and we believe it can serve as our physics core for the next ten years."

Pitched as a response to developers' needs in terms of when the player is really pushing a game, the new Havok Physics solution has been built to evade the performance spikes and associated problems encountered when high-body scenes push memory to its limit. It does so by distributing the demands of complex physics scenes across the multiple cores that are now a standard in contemporary computing hardware.

"Before we would separate how we simulate things," explained Joel Van Eenwyk, field application engineer at Havok. "Now we separate how we simulate certain things on different cores a lot better than before, so now the more objects and cores you have, the more we can distribute that work across them."

And according to Coghlan, that means the new Havok Physics will be vital for developers concentrating their efforts on the upcoming console generation.

Presently, 2K Czech has been confirmed as an early adopter of the tech. www.havok.com/physics



Havok's Ross O'Dwyer (above) says its technology pays off greatly in for the game experience (main)

start building plug-ins and sharing those with the community. That's important to us."

The inclusion of Lua scripting also points to a designer-suitable tool that could have much potential for rapid prototyping – which is one of Unity's core strengths – and Havok is already fleshing out a Project Anarchy best practice guide with consideration such as that in mind.

And while toolset is conceived to be of use to a single staff member working in isolation prototyping, it has also been built to support multiuser editing, and includes Perforce integration; something especially convenient for Project Anarchy's intended audience as the versioning outfit now lets a studio harness up to 20 seat licences before charging, with the so-called 20/20 Program.

FROM SMALL ACORNS

On the matter of Project Anarchy's intended audience, it is designed to serve teams of five staff members and above, and Havok is confident that it will provide an entry point into the company's long-established triple-A solutions as teams grow.

"We really don't see there being a limit to the kind of developer from the point of view of commercial ambition or studio size," said

O'Dwyer. "For smaller studios that are just dipping their feet in the water we're hoping there'll be sufficient material to get going quickly and to build up skills with the toolset over time.

"For larger teams we have a feeling they'll start out with the free engine and then engage directly with us for more support and source. It's not that the larger team couldn't be successful, but at that size there's an economy of scale to having more source and direct supporting."

While Havok sees both small and large projects falling under the Project Anarchy umbrella, it is clear that one of the outfit's motivations for publishing a tool that generates little in direct profits for the company is about establishing a network of developers literate in use of its tools and loyal to the way solutions like Havok Physics function. A studio versed in Project Anarchy is a studio primed for use of Havok's console middleware, after all.

BEFORE ANARCHY

Of course, Project Anarchy doesn't mark Havok's debut in supporting mobile, but previously it tended to work closely with giant studios embracing phone platforms,

DEMO SEEN



PROJECT ANARCHY'S FIRST game has already been made, and it ships with the development environment for users to pull apart and dissect.

The action orientated dungeon brawler is simply titled 'RPG Demo', prompting Havok managing director David Coghlan to have quipped: "We're better at making technology than naming games".

Developing RPG Demo was vital to Havok in refining Project Anarchy, but first and foremost it serves as a starting point for new users wanting to understand a practical application of the new platform.

It also happens to show off the potential of Project anarchy.

"The RPG Demo has baked light, and dynamic light, so that's a big deal on mobile, especially running in real-time while you're also running physics and AI and everything else," stated Havok developer support engineer Joel Van Eenwyk. "A really cool rendering demo is one thing, but putting all this together and it still looking good is pretty exciting. And a small team really can achieve this."

crafting a modified solution for a team with money to spend.

"To date the ways that Havok technology has appeared on mobile has sort of mirrored the way Havok technology has come out in console games," confirmed Coghlan. "It's tended to be the more ambitious triple-A style games. Gameloft's *Modern Combat 4* is a really good example of that; it tried to bring a console-like experience to phones and tablets, and it did so using Havok technology.

"But what we couldn't help but notice was the really broad ecosystem of developers who are doing phenomenal things on mobile. We feel that if we put our tech into that group of people, it's going to be a good thing for the development community and it's going to be a good thing for us."

Havok is expecting to push Project Anarchy into public beta for spring 2013, with sources suggesting that means some time in June.

The firm clearly has a job on its hands when so many developers are already besotted by the likes of UDK and Unity, but with Havok's heritage and existing toolset preceding it, it could just be that Project Anarchy will inaugurate itself as a distinct alternative to the establishment. ■

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DEVELOP DIARY

Your complete games development event calendar for the months ahead



E3 EXPO 2013

June 11th to 13th
Los Angeles, USA
www.e3expo.com

THIS IS IT. That time has already come round again for the industry's best to take to the stage and present their wares in LA at the biggest games show on the planet.

At this year's E3, we should hear more about Sony's PS4, Microsoft's next Xbox and Nintendo's strategy for Wii U. Away from the press conferences, the show floor will be an opportunity for new development deals. *Develop*, and our sister title *MCV*, will be at the event to bring you all the news.

MAY 2013

MOBILE GAMING USA 2013

May 14th to 15th
San Francisco, USA
www.videogamesintelligence.com

DEVELOP QUIZ

May 15th
London, UK
www.develop-online.net/events

VIDEOGAME ECONOMICS FORUM

May 16th to 17th
Angoulême, France
bit.ly/YW0BSA

NORDIC GAME CONFERENCE 2013

May 22nd to 24th
Malmö, Sweden
www.nordicgame.com

GAME CONNECTION ASIA 2013

May 28th to 29th
Shanghai, China
www.game-connection.com

JUNE 2013

E-VIRTUOSES

June 4th to 5th
Valenciennes, France
www.e-virtuoses.net

E3 EXPO 2013

June 11th to 13th
Los Angeles, USA
www.e3expo.com

GAMES FOR CHANGE FESTIVAL 2013

June 17th to 19th
New York, USA
gamesforchange.org/festival2013

WEB GAME CONFERENCE 2013

June 19th to 20th
Paris, France
www.webgameconf.eu

BRAINS EDEN 2013

June 28th to July 1st
Cambridge, UK
www.creativefront.org

JULY 2013

DEVELOP CONFERENCE 2013

July 9th to 11th
Brighton, UK
www.developconference.com

DEVELOP INDUSTRY EXCELLENCE AWARDS 2013

July 10th
Brighton, UK
www.developawards.com

CASUAL CONNECT USA 2013

July 30th to August 1st
San Francisco, USA
usa.casualconnect.org

AUGUST 2013

DARE PROTOPLAY 2013

August 8th
Dundee, UK
www.dareprotoplay.com

THE MONTH AHEAD

A look at what May has in store for the industry and beyond



MAY 3RD Iron Man 3.

Robert Downey Jr dons the red and gold armour once more for Tony Stark's third outing.



MAY 15TH Develop Quiz.

Your second chance this year to show your trivia chops and charge to quiz glory.



**MAY 21ST
Casual Connect Asia 2013.**
Join games makers in Singapore for a chance to witness the latest trends in the sector.



MAY 24TH Fast & Furious 6.

What do you mean you're shocked to see a sixth *F&F* film? Car chases will never get old.



MAY 4TH Star Wars Day.

A new trilogy is on the way, so what better time to celebrate/shake your fist?



MAY 17TH Metro: Last Light.

Ukrainian studio 4A Games takes us underground in its FPS survival horror title.



**MAY 22ND
World Goth Day.**
Time to bust out your black eyeliner and relive your goth days. We've all been there.



MAY 31ST Fuse.

Insomniac looks to spark interest in a new audience with its first-ever multiplatform game.



MAY 13TH Game Monetisation Europe.

Join 150 game execs to discuss new ways to attract more players for less.



MAY 17TH Star Trek into Darkness.

Kirk, Spock and the crew of the Enterprise return for JJ Abram's all-action sequel.



MAY 22ND Nordic Game 2013.

More essential B2B sessions at the tenth anniversary of this Nordic conference.



MAY 31ST Grid 2.

Take a ride through urban sprawls in Codie's next go at winning the street racing crown.



To find out more about Deep Silver's publishing, marketing and promotional services, go to www.deepsilver.com

The Amiqus logo features a stylized orange and yellow circular icon above the word "amiqus" in a white, lowercase, sans-serif font, all set against a dark blue background.

Variable declarations



//COMMENT: BUSINESS

Surviving the big thaw

Rick Gibson asks if British studios will thrive now spring is here?



The influx of start-ups in London (above) has potential, but Rick Gibson is sceptical that a majority of them will survive

THE UK'S GAMES sector is growing again. After years of declining headcount, lots of new studios are appearing, a tax credit is in the air and multinational companies are returning to these shores. Has spring finally sprung for the British games industry?

This month I'll look at Games Investor Consulting's latest survey for TIGA, and consider the future of British development.

The headline – developer headcount finally returning to growth after four years of decline – reads well, even if it's a modest increase of four per cent. We noted this bottoming out last year, but what's driving this growth? There aren't many green shoots among console studios, instead a fair amount of contraction, lots of re-structuring and some closures of companies that until very recently were the industry's backbone. Growth is coming from the independent sector via mid-sized studios and from a swarm of tiny start-ups, but perhaps more important are the seeds of big studios newly sown by international companies like GREE, Activision Blizzard, Konami and Microsoft.

TO BOLDLY GROW

More headline-grabbing is the unprecedented rate of new studios forming across the UK. Like the frantic star formation triggered by the death of massive heavenly bodies, the supernovae of big studios like Bright Light, Eurocom and Realtime Worlds

have clearly triggered a welter of local start-ups, as well as the traditional cherry picking by established players for jobs further afield. Downsizing and a dearth of jobs for graduates emerging from games degrees also contribute.

“Despite these encouraging signs of growth, many fledgling studios will be susceptible to a shock; particularly, say, a hard frost in the mobile market.”

Many of these studios have great potential, but most are highly fluid companies, some of them run part-time by those with full-time jobs elsewhere, many with virtual, outsourced teams, some growing strongly, others barely viable, and some are mothballed soon after their first press release. It's likely that 'ghost' studios – many with little or no commercial momentum – form a substantial proportion of these start-ups. In many ways, it's optimism that's driving headcount growth and company formation. What has now become the industry orthodoxy about faster, lighter, cheaper games is confirmed in the numbers.

A large proportion of British studios self-publish, mobile is hugely popular, and a declining minority of British studios now primarily produce games for console. Whether these new network games markets can justify this optimism and sustain this growth is the subject of many a column, but what is clear is that the risks and concomitant company mortality rates are still high.

BACK IN THE DAY

We have seen similarly massive studio proliferation before, in the PlayStation boom years of the early 2000s. The UK had two-to-three years of rapid headcount growth and prolific start-ups before a sudden extinction of scores of studios from over-supply. Back then, the surviving studios grew to peak size by picking up whole teams and studios, and acquisitions by global players started to rise. Would a similar level of collapse be supported by growing studios today? This seems unlikely, as few studios can snap up entire teams anymore, today's development market is more globalised and international companies are more cautious.

What about organic growth, or, should I say, the inorganic growth of companies raising their own money to grow? With SEIS tax relief, crowdfunding, Abertay's Prototype Fund and the (delayed) games tax credit, access to finance has eased, albeit only slightly, but a funding gap still exists. Those attempting to raise funds for expansion, even after a promising start, are finding finance hard to come by.

So this tipping point is finely balanced. The same factors as ever govern the UK industry's prospects – global competition, access to finance and skills, a fast-changing market, another console generation coming – and the same old balance maintained between what used to be called publishers and independents.

The next console generation and the tax credit will trigger new investment in the UK and we expect growth to continue. But despite these encouraging signs of growth, many fledgling studios will be susceptible to a shock, particularly, say, a hard frost in the mobile market. The real question remains, just how many of these new start-ups will still be around in three years' time? ■

Rick Gibson is a director at Games Investor Consulting, which provides commercial check-ups, strategy and data to games, media and finance companies.

www.gamesinvestor.com



//COMMENT: STUDIO MANAGEMENT

Overtime is like cholesterol

Mike Simpson considers the concept of 'good overtime'

AT GDC THIS year, one of the sessions offered developers a platform to rant for five minutes about whatever pisses them off most. Anna Marsh of Lady Shotgun chose to rant about how overtime in the games industry is a 'bad thing'. It was both funny and comfortably familiar, not least because Anna used to work here at CA. It's an argument I've heard many times: overtime ruins people's quality of life and doesn't get the work done better or faster. We all know that overtime can be bad, but is it always true? Is there such a thing as 'good overtime'?

I've been doing development overtime for 30 years now. I remember all-nighters back in the 80s and 90s; a colleague going out for pizza, not coming back, and being found asleep in his car outside, door open and one leg out. I remember double all-nighters, finishing that last line of code and dashing to the duplicator with the master, with the game on shelves 48 hours later.

WHEN IT COMES TO THE CRUNCH

They're fond memories. It was hard, but it was great fun too. Projects were short, results immediate, and the teams were tiny. We were doing it for us, and not for anyone else.

By the 21st century, we figured out how to accurately predict how long a project would take. Sadly, this didn't mean the dates matched the publisher's requirements, and we still found ourselves burning game quality and the wellbeing of the team to achieve near impossible deadlines. Back in 2000, we ate a tonne of takeaway food finishing *Shogun: Total War*. It wasn't good for us but we were doing great work, which founded the *Total War* franchise.

Nowadays, the *Total War* team does far less overtime than we used to. We're better at planning, and judging the quality/cost/time trade-off. We've also learned to flip the team's mode from 'explore and innovate' to 'get the

bastard finished' without needing the pain of overtime. If you're trying to do something truly original it's much, much harder, but even on a franchise sequel it only takes losing a key developer or two to throw your plans in to disarray. The pressure to work extra hours is impossible to completely escape.

“With good overtime, the extra hours are not the thing that benefits the project. They're a side effect of people engaged in work they think is worthwhile.”

WHEN LABOUR ISN'T WORKING

But does overtime work? There's plenty of research that shows that extra hours worked don't directly equate to more stuff getting done, and that there's a point where working more is counterproductive. But it's not the same for everyone. And it seems like the more creative and talented you are, the higher the limit. At award ceremonies, the developer receiving the award always, always thanks the team for the exceptional effort they put in to making the game. This isn't because overtime effort is necessary to win awards; it's because award-winning developers are driven, and driven developers spend their time doing what they love.

I think that overtime can be divided into good and bad, and that good overtime benefits both the devs and the projects. With good overtime, the extra hours are not the thing that benefits the project. They're a side effect; a symptom of people fully engaged in work they think is fascinating and worthwhile, and they stay later because it's more fun than

whatever else they would be doing. The line between work and leisure blurs and can sometime fade. The team puts their soul in to the project and it shows in the end result. They achieve great things. Games development is art, not manufacturing.

Gladwell's 10,000 hour rule states that 10,000 hours of practice will make you a genius at any particular activity. Plenty of us got those hours of practice early on in our careers, much of it through overtime, and we've built on it since then. I think we owe it to the next generations of talent to provide an environment which allows and encourages them to make themselves geniuses in their chosen field. If a thing is worth doing, it's worth doing obsessively.

NO BAD THING?

So, good overtime improves the quality of a game, develops and exercises talent, gives space to innovate, lets you help struggling colleagues, or squeeze in one more feature, or polish off an annoying rough edge. It helps win awards, and deal with unforeseeable events.

Bad overtime is not completely voluntary, is enforced to meet an arbitrary deadline or cut costs, goes on too long, is too intense, is planned for from the start, isn't recognised or rewarded, or it's there to fix problems that are not of the team's making.

Overtime is like cholesterol. The most delicious bits of games development are full of it. There is good overtime and bad overtime and too much of the bad kind will kill you. It can't be avoided completely, but with careful dieting, the good compensates for a little bad. ■

Mike Simpson is creative director at Creative Assembly. He joined in 1996 as director, and has since spent much time at the reigns of the developer's lead IP, RTS series *Total War*. This month Simpson stands in for Tim Heaton.
www.creative-assembly.co.uk

//EXTRA CONTENT ONLINE



"The lines separating informal and inappropriate are becoming less clear. People are no longer making the distinction between casual and unprofessional, simply because there aren't enough contrasting life examples to draw from."

Stephen Caruana, Pixie Software



"We had some incredibly frustrating news that the EC has decided to launch an investigation in to the proposed UK games production tax credit scheme. While this is of serious concern, it is not an insurmountable barrier to overcome."

Jo Twist, UKIE



"I bet you're an awful business person. Or you suck at programming. I'd put good money on your rigging skills being somewhat lackluster. Apologies for the somewhat aggressive opening. But I hope you take my point."

Mike Bithell, Indie developer

To see all of our reader blogs visit: www.develop-online.net | Email craig.chapple@intentmedia.co.uk to contribute your own blog

Develop Awards: The finalists revealed



Diversity of European games development in full force ● Almost 100 companies vying for key industry accolades ● Ten different countries represented

JULY'S DEVELOP AWARDS will toast another diverse array of the finest European games development talent.

Almost 100 different companies have been listed as finalists for the July 10th event.

The shortlists for the 19 main prizes represents 36 different games and their creative talent, 49 different games studios and ten different European countries.

Respected iOS outfit Fireproof Games, developer of *The Room*, gets the most nominations – five – followed by four each for Dennaton Games (*Hotline Miami*), SCE's London Studio (*Wonderbook*), Arkane Studios (the French team that co-developed *Dishonored*) and Playground Games (*Forza Horizon*). NaturalMotion and its studio Boss Alien studio claim four between them, also after the success of *CSR Racing* in 2012.

There are also key nominations for free-to-play experts Supercell and its hit mobile game *Clash of Clans*.

Our improved awards for Creative Contribution also acknowledge the work of external European art and audio teams on vast international projects like *Halo 4* and *Ni no Kuni*.

There are nominations for all kinds of businesses, from solo indie games developers to 100-plus strong teams, middleware providers, service outfits and outsourcing firms.

The Develop Awards take place on July 10th at the Brighton Metropole hotel. To book a place, contact Kathryn.Humphrey@intentmedia.co.uk or call 01992 535 646.

For sponsorship and partner opportunities contact Alex.Boucher@intentmedia.co.uk or call 01992 535 647.

Current Develop Awards sponsors include Platinum Partners Crytek and Deep Silver, Gold Partners Testronic, Perforce, UKIE and Amikus, Drinks Reception Partner NaturalMotion and Table Gift Partner OPM Jobs.

www.developawards.com

DEVELOP AWARDS 2013: THE FINALISTS

NEW IP

Clash of Clans - Supercell
Clay Jam - Fat Pebble
Dishonored - Arkane Studios
Hotline Miami - Dennaton Games
Surgeon Simulator - Bossa Studios
The Room - Fireproof Games
Thomas Was Alone - Mike Bithell
Warface - Crytek

USE OF A LICENCE OR IP

Angry Birds Star Wars - Rovio
DmC: Devil May Cry - Ninja Theory
LEGO City Undercover - Traveller's Tales
LittleBigPlanet Vita - Tarsier Studios
Magic 2013 - Stainless Games
Sonic All-Stars Racing Transformed - Sumo Digital
The Snowman and the Snowdog - Crash Lab
Wonderbook - London Studio

VISUAL ARTS

Awesomenauts - Ronimo Games
CSR Racing - Boss Alien
Crysis 3 - Crytek
Forza Horizon - Playground Games
Hotline Miami - Dennaton Games
LittleBigPlanet Vita - Tarsier Studios
Rayman Jungle Run - Pastagames
The Room - Fireproof Games

AUDIO ACCOMPLISHMENT

Crysis 3 - Crytek
Fable: The Journey - Lionhead
Forza Horizon - Playground Games
Hotline Miami - Dennaton Games
Kinect Sesame Street - Soho Productions
Sniper Elite 2 - Rebellion
The Room - Fireproof Games
Wonderbook - London Studio

USE OF NARRATIVE

Crysis 3 - Crytek
Dishonored - Arkane Studios
The 39 Steps - The Story Mechanics
The Room - Fireproof Games
Thomas Was Alone - Mike Bithell
Xi: Continuum - nDreams
ZombiU - Ubisoft Montpellier
Wonderbook - London Studio

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Hitman: Absolution - Contracts - IO Interactive
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Race.net - Codemasters
Smart As - Climax Studios
 Turbulenz Platform - Turbulenz

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Hitman Absolution Crowd Tech - IO Interactive
Just Dance TV - Ubisoft
 Marmalade Juice - Marmalade
 Oculus Rift - Oculus VR
 Unreal Engine - Epic Games
Wonderbook - London Studio

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 Epic Games
 FMOD
 Geomerics
 Havok
 Marmalade
 Perforce
 Unity Technologies

ENGINE

CryEngine 3 - Crytek
 GameMaker - YoYo Games
 Havok Vision Engine - Havok
 HeroEngine 2 - Idea Fabrik
 Unity Engine - Unity Technologies
 Unreal Engine - Epic Games

SERVICES

Audiomotion
 LocalizeDirect
 Nimrod Productions
 Pinewood Studios
 Player Research
 Quantic Dream
 Testronic Labs
 VMC Game Labs

CREATIVE CONTRIBUTION - AUDIO

David Housden - *Thomas Was Alone*
 High Score Productions - *Harry Potter Kinect*
 Savalas Sound - *Halo 4*
 Side - *Ni no Kuni: Wrath of the White Witch*
 The Audio Guys - *Sonic & AllStars Racing Transformed*
 Wave Studios - *Kinect Sesame Street*

CREATIVE CONTRIBUTION - VISUALS

Axis Animation - *Halo 4*
 Cubic Motion - *LEGO City Undercover*
 Faceware Technologies and

CounterPunch Studios - *Crysis 3*
 Rabcat - *Forza Horizon*
 Realtime UK - Wargaming trailers
 Tarsier Studios - *LittleBigPlanet Karting*

RECRUITER

Aardvark Swift
 Amikus
 Avatar Games
 Creative Personnel
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MICRO STUDIO

Big Head Games
 Crash Lab
 Dennaton Games
 Fireproof Games
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BUSINESS DEVELOPMENT

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Inside video
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Mixing it up

Develop brings you an indispensable guide to a wide variety of video games audio specialities, p16



QA
investigated
p26



Zoë Mode
on
bonus culture
p32



Listen up!

Develop's Audio Special is back, serving up sound advice from some of the games sector's sharpest minds. Whether you're an audio pro or sound design virgin, the following guides are worth lending your ears and eyes



VIDEO GAMES SOUND has come a relatively long way since *Develop's* last Audio Special, just one year ago.

The final phase of the next generation's arrival is almost with us, tablet and mobile hardware is now boasting increased power with which to support games audio, and trends like spatial and binaural sound are becoming increasingly prevalent across a broad spectrum of studios and game types.

And still games audio suffers at the hands of the mainstream press, games development budgets and memory allocation, where it remains locked in a battle for the recognition and respect it so rightly deserves.

But you'll not find such disregard for all things aural in this issue of *Develop*, as over the next ten pages you'll see eight articles devoted to the topic of games audio.

We've gathered advice, analysis and opinion from a diverse range of experts, pulling in input

from those in disciplines as varied as voice over recording, full performance capture, library and custom sound, composition and tools.

Whether you're looking to learn how to tackle a games audio process within your own team, striving to pick the right specialist or tech, or even just want to learn the best way to work with a service provider on a sound project, we've got it covered.

And, as the demands on audio teams and the expectations from consumers climb, there's never been a more important time to tune in your ear to the latest developments in games sound, making this edition of the Audio Special more vital than ever before.

Fortunately, our Audio Special doesn't end in the pages you hold in your hands. Be sure to check online at www.develop-online.net shortly after this issue of *Develop* arrives, where you'll find a number of extra expert features looking at games audio.

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Crisis management

Steve Parker details Side's recent work on *Crysis 3*, where it recorded dialogue live in the mo-cap session



FOR *CRYSIS 3*, the team at Crytek took a different approach from their previous games for capturing performances.

For this production, Side was commissioned to cast actors who could provide the likeness, movement and voice for the lead characters in Crytek's sci-fi shooter, and these were captured, together, during performance capture shoots.

An important part of this process is ensuring a high percentage of the dialogue recorded during shoots can be used in the final game. However, recording final audio on the motion capture soundstage brings with it some challenges.

SOUNDS CHALLENGING

Firstly, a soundstage without set or audience can sound quite 'live', which is not ideal for recording game dialogue. And secondly, motion capture suits, head-cams, and props can create many unwanted noises. But compared to recording actors one by one in the booth, recording the vocal performances while the cast is performing physically together in the same space adds greater realism to the final scene.

On such projects, it's vital the sound team are involved at an early stage. At Side, if we haven't used the soundstage before, we carry out a pre-shoot visit, taking test recordings to evaluate acoustics. If the soundstage is okay, we may still use heavy drapes or matting to improve sound further. And we'll liaise with the motion capture team to ensure they install their servers in quiet boxes or off set.

With *Crysis 3*, our location sound team consisted of a mixer and boom op. The

primary audio source was a lavalier radio microphone. The actors wear these on their foreheads if the setup allows, or the arm of a motion capture helmet if not. And having the boom audio offers a different perspective as well as an alternative source if the lavalier audio is compromised. With the boom op in the volume together with the actors, they can make dynamic adjustments to mic positioning to improve quality, or even create desired effects.

“For *Crysis 3*, over 90 per cent of the dialogue recorded during performance capture was used in the game. Many movies need up to 75 per cent ADR'd.”

The mixer records actors to separate tracks on Pro Tools, synchronised to time code from the motion capture system, and backed up to a separate hard drive. From there, we output a number of mixes, including one of all actors for the director, writer and producer; boom audio for the boom op; and talkback for those who need it. Plus, if there's facial capture, while the head-cam footage is captured, we send the individual actor's audio to one channel and the mix of all actors to another. We can also send audio to a monitor wedge for footage playback or just to remind an actor of a read.

IN THE MIX

It's important to note that although the mixer may want a retake for sound, with so many different parties involved, if the take was perfect for everyone else, then the line may be marked for ADR later in the studio. But in these cases, recording to Pro Tools has advantages over recording to a simple location recorder. If the mixer does have a problem with a line, it's easy to grab another take on the soundstage by looping the line while the actor wears headphones, reducing the requirement for post-shoot ADR.

Naturally, there was some ADR to do on *Crysis 3*. For these recordings we prepare a Pro Tools session using the reference video footage of the actors, and then use a dubbing system that displays the script on the actor's screen, along with the reference video and a 'wipe' to help the actor with the timing of the line. And we try to get the best match to the audio from the soundstage by using the same lavalier mics in the ADR studio. If ADR is being done due to a line change, we'll also capture new headcam footage in the studio, which will replace the soundstage footage.

For *Crysis 3*, over 90 per cent of the dialogue recorded during performance capture was used in the final game. When you consider many movies need up to 75 per cent of their dialogue ADR'd; that's not a bad result. ■

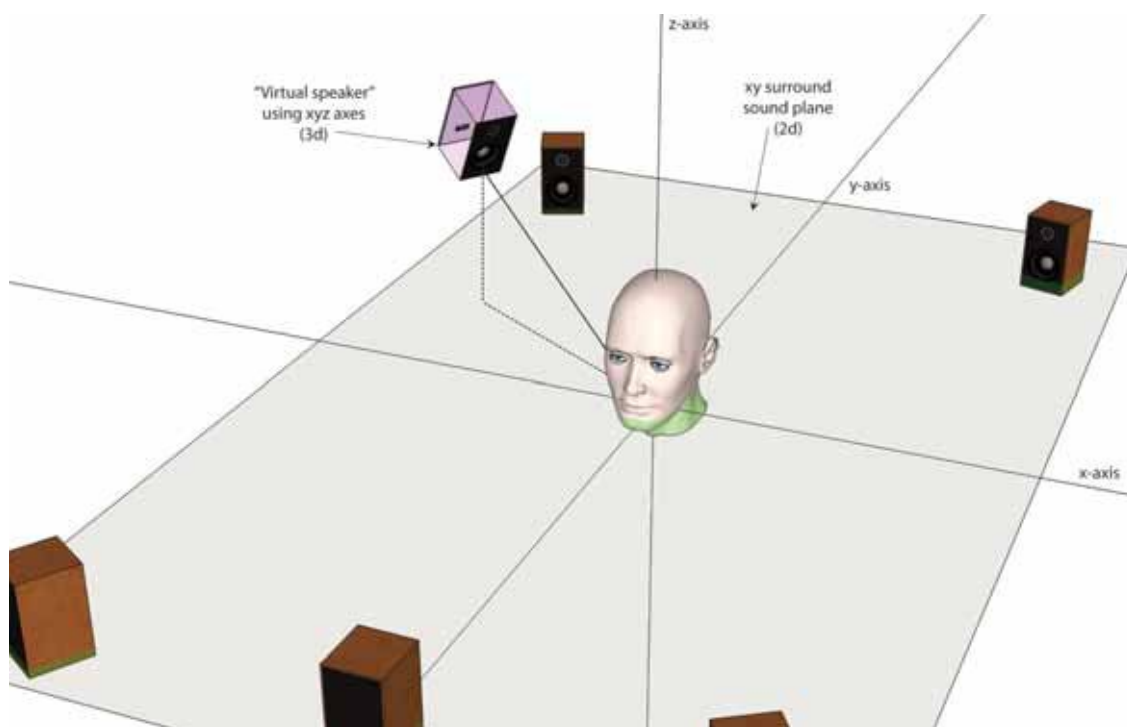
Actors perform in a soundstage, while their movements and voices are captured together to be used in the final game (above)



Steve Parker is technical director at Side, which offers numerous services including casting and directing for voice, facial capture and full performance capture. www.side.com

The 3D future of games sound

There's 3D audio, and then there's real 3D audio, says GenAudio's **Michel Henein**. Here, he explains the distinction



Technology giving audiences the chance to perceive accurate 3D sound (above), and thus be more spatially connected, will enhance game experiences, says GenAudio's Henein

LIKE MANY OF my colleagues – both audio and non-audio professionals alike – I am thrilled about what's yet to come in the gaming technology space.

With increasingly powerful next-gen consoles anticipated by the year's end, we'll have the ability to 'expand' soundscapes to accompany the expected jump in graphics. These new console systems will usher in exciting capabilities and game developers will, without a doubt, exploit them for gamers to enjoy.

Over the past several years, we've seen tremendous improvements in interactive audio, thanks to the sophisticated capabilities provided by middleware audio engines like Audiokinetic's Wwise and FMOD, as well as various proprietary audio engines. We now have fluid interactive music, better implementations of realtime and dynamic sound mixing, and higher fidelity audio overall – all in surround sound.

So, where do we go from here?

My answer: developers should make it their mission to abandon traditional stereo and 2D surround presentation formats, wherever possible, in favour of 3D audio.

REAL 3D?

But we already have 3D audio, don't we? Not quite. Within the context of gaming, 3D audio typically refers to sound sources being moved around within a game's 3D space.

Thinking about how players perceive sound presented by the vast majority of games, the sound field is typically along the Y-axis in the case of stereo, or along the XY plane for surround sound, regardless if physical speakers or virtual ones are utilised.

The problem is that nearly all games in the marketplace output sound, physically, as 2D, regardless if they are listening in stereo, using discrete 5.1/7.1 surround-sound systems, or using traditional head-related transfer functions (HRTF) through headphones.

“For gamers, physical speakers beyond 5.1 is a stretch. I believe, tech that will provide 3D sound using only two speakers or headphones will be received well by the marketplace.”

Clearly, what's missing in modern video games audio presentation is the ability to use the Z-axis to spatialise sound above the player's head.

In the theatrical market, we now have systems from Dolby, DTS, Auro 3D, Isono, and GenAudio which allow theater goers to hear sounds in all 3D dimensions (with 11.1, 13.1, and beyond). Most of these systems require physical speakers placed in all three axes around the theater to deliver 3D audio, or in the case of GenAudio, digital signal processing (DSP) provides Z-axis elevation with as few as two speakers.

For gamers, physical speakers beyond 5.1 (for example, with speakers mounted on the ceiling for height) is a stretch, to say the least, which is why, I believe, technologies that will provide the ability to perceive accurate 3D

sound using only two speakers, headphones, or existing 5.1 systems will be received well by the marketplace.

Exploiting the Z-axis (elevation) and providing an immersive 'true to life' audio experience will require improved methodologies that incorporate specialised neuro-auditory research and advanced DSP algorithms that can be integrated directly into a game's sound engine. Imagine a game with a dynamic, true 3D audio sound-field adapting in realtime with head tracking on the Oculus Rift, for example.

With next-gen gaming consoles, the ability to spatialise sound for players using all three physical dimensions will be possible as new technologies will emerge that will leverage increased processing power to deliver true 3D audio – such as GenAudio's technology based on brain-related transfer functions (BRTFs) which extends traditional HRTF methods by including brain response data measured using MRI.

MAKING IT CLEAR

The concern I have is the potential confusion for both game developers and consumers when audio technology companies begin to push actual 3D audio technology to the game industry. A proper classification system is in order to distinguish solutions that truly produce 3D audio from those that only produce 2D audio (yet are identified as 3D audio). While audio companies ultimately, must bear the primary burden to reclassify, market, and drive awareness of their 3D audio solutions, I strongly believe that the industry at large – game audio professionals, producers, directors, artists, designers, and other game development professionals – would be best served if they make their voices heard, calling for more better classification of 2D/3D audio technologies through various organisations, special interest groups, panels, and discussions across the entire spectrum of the video games industry.

The time is right for 3D audio technologies – or whatever the games industry decides to classify them as – with solutions emerging to replace legacy 2D audio technologies by the year's end. Gamers demand differentiation when new systems emerge and developers need to seek out 3D audio solutions to meet their demand for 'heightened' experiences – the horsepower is there, so let's use it. ■



Michel Henein is VP of gaming products at audio specialist GenAudio, and plans to launch their AstoundSound plug-ins for Wwise later this year.

While working at THQ, he shipped three triple-A titles as a sound designer.
www.genaudioinc.com

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Driving lessons

The Audio Guys co-founder Tim Bartlett offers a wealth of advice on recording real car sounds



Getting up close and personal with a roaring BMW (above) requires a careful approach

SOME OF YOU may know us – we have been around for a while now, and one of the areas that we have gained a lot of expertise in is car audio. For this article, we are going to share some of the wisdom we have learned over the years. Specifically, the recording process, as this can be extremely challenging.

The following applies for both rolling roads and track recording. Which one of these is best for games is for another article.

STARTERS ORDERS

Firstly, you need microphones; especially some small ones to get into nooks and crannies as you go about the process.

Lavmics are tiny, so can be placed almost anywhere. We use DPA 4062's. These are omnidirectional, therefore it's important to get them close to the sound source, otherwise you will get reflections back into the mic, as well as the direct signal.

Pencil-shaped condenser mics are probably next favourite as they are fairly small. We have some DPA 4011's which are cardioid response (directional). Contact mics can also be useful. Most types of mics will work, as long as they can handle the volume.

You'll want to get microphones which can handle high SPL. You are placing them close to very loud sources, and when we say close, we mean inches rather than feet.

Additionally, use as many microphones and channels as possible. Car recordings can be expensive, therefore it's important to capture as much as you can while you have the chance. So throw as many mics and channels at it as you can. We never record less than six, and usually it's over ten.

You need some nerve. We have seen fires, cars jumping off rolling roads, gearboxes seizing up, bonnets flying off, paint melting, you name it; so be prepared.

A LITHE WIRE

You should also be prepared to be flexible, and mindful that the owner of the car, and track or dyno, are not going to have a clue what you want. Speak to the owner of the car and make sure they are comfortable with what you want to do. You should also communicate this clearly to the driver of the car if they're not the owner. You also need to not care about your microphones too much.

That may be counterintuitive, but you will need to put these mics into dangerous places if you want the best results.

You should also book more time than you think you will need. There are always problems, so be prepared for it to take longer than you thought.

Make sure you attach everything securely. Gaffer tape and cable ties are essential. That applies to both microphones and cables. Before beginning any session, ask yourself 'is anything going to be flying about once the 100mph air starts flowing?'

Of course, do not put microphones near anything that will get hot. Did you know that microphones turn blue when they get super hot? Cables also melt very readily. Avoid getting too close to exhaust manifolds, turbo units and so on.

You will need wind protection, especially if you are recording on track. Consider buying extra wind protection materials, to wrap around mics if required. Sometimes you cannot avoid massive airflow, but be prepared to try to mitigate the effects. Certainly, do not put microphones in the direct airflow of the exhaust. This one is surprisingly easy to overlook. At best you will get a windy and fluttery recording; at worst you will roast a microphone.

SOLID ADVICE

And use a solid state recorder. A hard drive recorder may work on quieter cars, but in very loud environments, HD recorders often fail, and they have for us.

Additionally, you should always record at a high bit/sample rate. There will be some post processing when you get back to the studio.

Think about microphone placement. Engine and exhaust are a requirement, but think about what else might make cool sounds; consider turbo, supercharger, gearbox and such.

And vitally, it's always better with two people. You will need one to manage the recording, and one to direct the driver.

Importantly, you need some nerve. We have seen fires, cars jumping off rolling roads, gearboxes seizing up, bonnets flying off, paint melting, you name it. You will have problems, so be prepared.

Finally, you need some luck.

Car recordings can be stressful, and there's a bit of an art to getting them performed with total success. Cover as many of the points above as you can, and you will have a fighting chance of getting something usable. ■



Tim Bartlett co-founded The Audio Guys in 2006, having worked on the Codemasters sound team since 1993.
www.theaudioguys.co.uk

Lights, microphone, action

Filmic-quality sound is a Holy Grail for many, but Wave says a very special approach is needed to make it a reality



IT WILL SURPRISE nobody in this business that many games developers long for cinematic audio in their games.

Games makers have for many years tried to match pace with the film industry, keen to deliver products that rival the silver screen's knack for drama and immersion.

And as games' visual and aural potential is constantly bolstered by new hardware, middleware and methodology, it seems like a reasonable ambition.

But for audio production specialist Wave, which serves the film, advertising and games sectors, it's clear that the reality of cinematic sound in games requires a distinct and considered approach.

While Wave has seen vast improvements in developer's expectations of what can be done with games, many times the team there has been greeted by clients naïve to the fact that achieving cinematic audio requires an approach quite different to that of Hollywood's.

KNOW YOUR MEDIUM

"What I hear all the time now is that developers want their games to sound more cinematic, and they want to give their games a feel of being a film through sound," explains Wave's head of game audio games Anthony Matchett. "The problem with that is that a game is not a film; it's an interactive medium. If you take a film, it requires 90 minutes or two hours that's completely linear from start to finish. With a game, you don't have that luxury, and that's where the differences arise."

Instead of people wanting their games to sound like films, says Matchett, what they should really be striving for is for the audio in games to have the same level of quality as film. It's a subtle difference, but one that

demands a tailored approach utterly different from that adopted by cinema.

"I think the biggest difference in terms of the production process is that game sound is played 'live' from a games engine, or at least the bulk of it is," offers Wave co-founder and co-owner Jonnie Burn, who has worked on some of Wave's most high profile film work. "Although those engines are extraordinarily complex and well developed, they still lack a little in allowing you to give the audio quite the finesse you'd give to a film."

A film requires 90 minutes that's completely linear from start to finish. With a game, you don't have that luxury.

Anthony Matchett, Wave

But any potential shortcomings are perhaps just a symptom of a bigger problem, rather than a cause. In the world of film, ample portions of time and budget are assigned to sound. Contrast that to games, where audio teams still have to fight for resource, and the problem becomes clear. The time given to craft a film score is often many times that typical of the games business, meaning less hours to produce more content, ultimately resulting in a diminished opportunity to refine.

"What's more, with a film when you work on the audio, the sound is the only thing you're changing when you do change the sound," states Burn.

GIVING IT TIME

Fortunately, Wave is confident that much can now be done to match the aural quality found in films.

"The crucial differences is that with a game you're constantly putting yourself and your audio work in the hands of the player," states Matchett. "So, if you want that cinematic sound you can't just copy the film industry approach. You have to make the right sound choices, and consider how the player's actions might bring different sounds together."

"There's also the way the sound needs to react to every possible kind of eventuality the player can create, rather than that linear series of events seen in film. You really need to put a lot of thought and time in."

That particularly applies to games VO, says Matchett, where the attitude still persists in some corners that the process can be rushed through with corners cut.

Wave is optimistic that more can be done. Matchett and Burn believe that attitudes continue to change, and more studios are beginning to understand the time and effort needed to parallel, if not match, cinematic sound. And Wave's expertise across every facet of both games' and films' audio production means that they can do much to help with the process.

"It's really as simple as doing the mix in a good sounding room, using nice mics and monitoring speakers," concludes Matchett, who points to Dice's work on its titles' audio as proof that the best studios do understand great audio.

"Finally the games industry is starting to realise the effort needed to give games good sound," he concludes.

www.wavestudios.co.uk



Top-to-bottom: Anthony Matchett and Jonnie Burn of Wave (main), which has highly specialised studios in London and Amsterdam

Spatially aware

Firelight Technologies' **Gino Bollaert** asks what's next for spatialised audio, and shows you FMOD Studio's role in it



FMOD Studio's (above) open architecture give developers the means to construct more sophisticated spatial mixes

OUR EARS PROCESS subtle auditory cues in everyday environments. They supply us with a constant stream of information on spaces and objects, both within and outside our field of view. Spatialisation is the process of rendering 3D audio in virtual environments. Spatialisation of audio in game design has the potential to greatly enhance the playing experience and a diverse range of advanced technologies make this possible today, even over stereo headphones.

Firelight Technologies, the developers of FMOD, the audio engine used in recent hits *Tomb Raider* and *Hitman: Absolution*, has released FMOD Studio, a new sound solution for games. With a powerful and intuitive user interface, FMOD Studio features an inbuilt spatialiser and an open plug-in architecture which makes advanced third-party technology easily accessible to developers.

WHY SPATIALISATION?

With the increase in computing power, graphics technology has come a long way in accurately modelling light and materials, and today's shaders are able to generate stunningly realistic visual scenes. This extra power also enables more sophisticated audio engines to accurately model acoustic environments and we are now seeing an acceleration in developments in 3D audio tech for games, even for mobile devices.

Games can achieve a high level of realism and immersion by modelling the way in which sound radiates from a game object, its propagation in the virtual environment up to how it reaches each ear. Spatialisation may also be used creatively to emphasise the scale or mood of the space surrounding the player or even inform the player on the

location or distance of objects/actions and provide useful cues, for example imminent threats, near misses, objects of interest in nearby spaces.

HOW IT WORKS

"High-quality spatial audio is about more than simple positioning, it's also about modelling different acoustic environments, and thereby giving the user the impression of being inside for example a small room, a concert hall, or a forest," explains Fritz Menzer, CEO of MN Signal Processing.

Spatialisation can be understood in terms of different processes:

- The process of modelling the acoustic environment is about recreating the echoes and reverberations to get a sense of the spaces in the game. The ratio of direct-to-reverberated sound, the delays and directions of reflections and the absorption and scattering of different frequencies also help us to pinpoint the position and distance of sounds and obstacles.

Modelling may either be coarse using delays, reverb and mixer snapshots defined by the sound designer in the tool for different areas of a game level, or may be precisely calculated from real game geometry with the use of plug-ins.

- Technologies focused on accurately producing sensations of height, depth and direction exploit knowledge of human sound perception (psychoacoustics) and are delivered through plug-ins for playback on existing headphones, speakers or specialised hardware. Examples include binaural

spatialisation, virtual surround over headphones and speaker arrays.

- Cinematic techniques can be used to enhance or emphasise spatial cues. This can be achieved with some creative use of reverberation, filtering and delays in the audio tool.

Solutions available today, such as those provided by GenAudio, IOSONO, DTS and Dolby, for example, address varying combinations of these aspects.

FMOD STUDIO AND SPATIALISATION

FMOD Studio is the first Digital Audio Workstation (DAW) for games, providing advanced spatialisation features through a familiar multi-track and mixing desk interface. The configurable in-built 3D panner module models sound size and performs smooth, multi-channel panning. Pre- and post-panner sends on tracks can send to one or more simultaneous reverb return buses while mixer snapshots and automation are able to modulate send and return levels based on 3D position. The ability to automate any effect parameter also enables advanced distance-based filtering.

FMOD Studio's open plug-in architecture provides the developers of 3D audio technology unprecedented access to the internals of the FMOD audio engine, making these technologies available to game developers. One example of this is swapping out or adding to the built-in 3D panner with third-party or in-house plug-ins.

The FMOD Studio platform can also provide support for plug-ins which rely on dedicated hardware or software by detecting the presence of the technology on the user's machine and enabling it in the game.

A BRIGHT FUTURE

"We are excited at the possibilities that modern systems like FMOD Studio create for 3D audio content authoring and for interactive media consumption," says Veronique Larcher, director of research at Sennheiser North America.

FMOD Studio features a powerful built-in spatialiser and supports a diverse range of other software and hardware technologies through its open plug-in architecture. Built on a mature cross-platform audio engine, developing in FMOD Studio ensures these technologies are easily accessible to creators and supported on all game platforms.



Gino Bollaert is a respected audio specialist working at Firelight Technologies, makers of FMOD Studio, an audio content creation tool for games. www.fmod.org

Custom sound

Will Freeman talks to Soundrangers about audio for mobile



SOUNDRANGERS IS A games business of two parts.

It started out making custom audio for games, which it does to this day. That, in turn, lead to the building of an immense sound library, which Soundrangers now shares as the second half of its operation.

And recently, on the custom audio side, Soundrangers co-founder Barry Dowsett (above) has seen the company – and its clients – have to adapt to meet the new demands of mobile audio.

“What we’ve been seeing for a few years on the custom design side of our business is a lot more work with those making games for mobile and tablet, so we’re doing a lot more work for iPhone and iPad games,” confirms Dowsett. “Specifically, where it used to be just iPhone, things are branching out from there to cross other games platforms and hardware.”

THE SPICE OF LIFE

What that means for Soundrangers is an increase in contributions to shorter projects, more time spent serving original IP, and, ultimately, greater volumes of varied work.

“It’s been fun for us because, with the triple-A stuff you’ve got a lot of content to deal with, a lot of voice overs, a lot music, a great deal of middleware to consider and lots of iteration,” says Dowsett. “We’ve seen with the mobile work we’re doing that we can take a lot of what we know from the triple-A space and apply it to

iOS devices, by making sure the quality control is really high.”

But it is important that mobile developers are educated as to the needs and expectations associated with mobile games audio. As such, Soundrangers now serves as both audio designer and consultant on mobile projects; a strategy other audio service providers may be wise to adopt.

“Not all of the iOS games developers fully understand some of the traditional facets of audio design for games, so they may not know the practicalities of some audio middleware and the associated techniques that allow us to make sounds more dynamic,” states Dowsett.

WORKING AS ONE

Developers, then should approach working with an audio partner with an open mind and a willingness to learn.

“We can get studios up to speed with how they can make their games more dynamic in that way, and we can help them with all the knowledge we’ve built up over the years.”

Once a developer has approached its sound design partner, Dowsett recommends it’s best to let the audio team come back to the developer with advice on context and reasonable use of technology, and treat the service provided as a partnership, so a studio can build a reasonable expectation of the best work approach and final aural goals for the project.

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quality matters

Giving games a voice

Craig Chapple speaks to Hugh Edwards about why High Score has set up a course for voice acting in games



Hugh Edwards' (above) company High Score has assisted the likes of TT Games, Rebellion, Codemasters and others

VOICE ACTING IN games has come along way since the 1990, when classic one-liners and terrible acting clangers haunted the industry, even from some of our favourites.

Although it can be argued that some games voice acting nowadays doesn't quite hit the standards of an animated film, the games industry is increasingly attracting star quality, such as Ellen Page in Quantic Dream's *Beyond: Two Souls*, *Uncharted's* Nolan North and *Enslaved: Odyssey to the West's* Andy Serkis.

But is there enough talent available for games voice acting? And do they know the specific techniques and requirements for voicing game characters?

Voice director Hugh Edwards and famed *Fable* and *X-Factor* voice actor Peter Dickson are looking to improve the talent pool for gaming voice actors by setting up a special course for professionals at audio outsourcing outfit High Score Productions in London.

STAGE SCHOOL

The program aims to help actors learn what is expected of them, how to create a character in a matter of minutes and special microphone techniques to ensure good quality audio, and also make sure they avoid the wrath of their director.

Edwards says the all-day course was set up in reaction to the lack of education on game voice acting in drama schools, with many institutions yet to catch up with the game industry, instead offering lots of dramatic training rather than on-mic training, adding that he is sometimes having to train up good but inexperienced actors on the job in order to deliver VO the way it is needed.

"The way we approach the course is, from my point of view as a voice director from the gaming side, and from Peter's point of view as the actor and character creation side. Approaching it from both of those angles creates quite a safe environment for the actors," explains Edwards, who says it can be hard work if you don't pay attention.

Historically, audio was the last thing thought about and consequently the budgets were small. But now the industry has had to pay more attention.

Hugh Edwards, High Score

"Almost all of these people are great actors, performers or narrators already, but they're just not aware of the different terms or methods use specifically for gaming, and not in other areas.

"We created the course which has been running about five months now, and we're now starting to go back in the schools and the drama schools to start educating them and start doing the courses through the schools as well. But for everyone out there who is an actor or a voiceover professional who has done drama college already, it's too late for that, so that's why we have created this course as a place where people can come and learn that stuff without having to go back to college."

Edwards goes on to say that, although there are a couple of courses that help with casting and some automatic dialogue replacement (ADR) programmes, High Score Productions is currently the only company in the UK running a gaming-specific voice acting course. And High Score has worked with a number of studios, such as TT Games.

REWRITING THE SCRIPT

But what about the industry's role? Edwards points out that as recently as five-to-six years ago, scripts were often written by studio employees who had the most time, regardless of their talent for writing.

Dickson goes on to say that things have had to improve with the advances in domestic audio, making courses like those provided by High Score Productions more important than ever.

"It's been the poor relation up to now. As we say in the course to the students, historically, the audio was the last thing that they thought about and consequently the budgets were small," says Dickson.

"But now with the improvement in domestic audio quality in people's houses, a lot of people have in-home cinema systems and the gaming industry has had to up its game and pay more attention to the quality of the sound. We're here to improve the voice-production across the industry, not just for ourselves." ■

CHANGING TIMES

HIGH SCORE PRODUCES the dialogue for around 25 games a year, making it a prolific industry influence. And studio director Hugh Edwards is clear that things are no longer the way they used to be.

"One of the things we have found over the years is that if you run voice projects in a non-integrated manner, for example, having one team do the English and another doing the FIGS, without having a unified approach, you can end up with poor, sometimes disastrous results," he says. "You try getting a quickly-voiced American slang-line in a cutscene voiced with the same time-constraint in German.

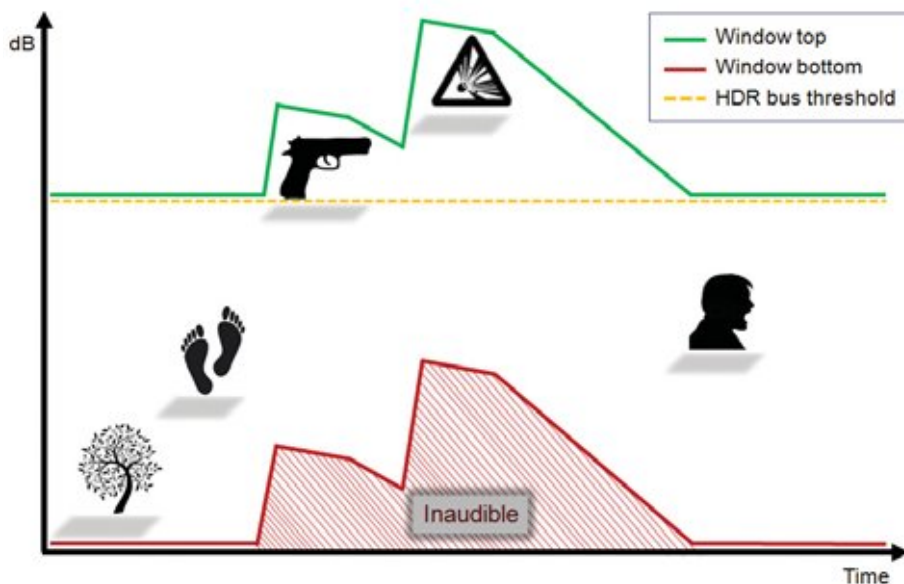
"So many companies make mistakes like this, because they only do one or two games a year and so don't have the breadth of experience we do.

"Yes, we're running the Voiceover for Gaming course for actors, but we're also here to help devs and publishers with the backend side too. Our goal is to improve dialogue production across the industry because in the long term, it's going to help us all."

www.high-score.co.uk

Getting ready for HDR

Audiokinetic's **Simon Ashby** details what developers and tool makers must realise to get the most from HDR audio



WHEN A GAMES developer asked us to add high dynamic range (HDR) audio capabilities in Wwise through a feature development contract, we started by reviewing the existing literature on the subject.

The motivation was simple; how to consolidate reality with what can be reproduced on a typical sound system. While the human ear has an incredible dynamic range, greater than 130 dB, in a typical listening environment we can only expect to reproduce about 40 to 50 dB.

The tricky part though was this: how can we offer a compelling mixing experience for the sound designer? After several months of work and many prototypes, we finally arrived at a point where game developers will benefit from a dynamic mixing system that really helps to clean the mix and brings the focus to the most important sounds. There's no magic tricks and it's very effective.

HOW TO SETUP HDR AUDIO

Sounds that benefit from HDR audio are most likely emitted from the 3D world, which, usually, excludes UI sounds, non-diegetic music and narrator commentary. Chatter dialogue may be included in the HDR mix, but many games will prefer critical dialogue to be outside of the HDR mix to provide better control of their volumes.

To enable HDR, at least one bus in the hierarchy must be flagged as 'HDR' and a dynamic range set for the game. The dynamic range is called 'the window', which spans the range between two boundaries – the window top and window bottom. These boundaries are set on the HDR bus and in the project settings, respectively. At runtime, the sounds playing with volumes higher than the HDR bus threshold push the window up which consequently reduces the volumes of the quieter sounds.

Your amp goes to 11. My HDR goes to 100.

We're expecting games to set the HDR threshold around 0 dB. Consequently, the loudest sounds will be assigned volumes above 0 dB to activate the volume ducking mechanism. At this point, as an audio specialist, you might wonder how volumes above 0 dB can play without experiencing clipping. This is possible because the volume of the loudest sound, above the volume threshold, is played at the volume level of the HDR bus. All other quieter sounds are ducked down proportionally.

“ Sounds that benefit from HDR audio are most likely emitted from the 3D world, which, usually, excludes UI sounds, non-diegetic music and narrator commentary. ”

This automatic mechanism, which momentarily reduces the volume of the quieter sounds, gives a perception of a higher dynamic range. It also provides space in the mix and sets the focus to the most important sounds, which, in the HDR paradigm, are the loudest sounds.

The table and graphics above (see main) illustrate the effective volumes applied at the output of the HDR bus for various input values in a scenario where four sounds, distinguished by colours, are played. As seen, the HDR bus scales down the input volumes and plays them at 'normal' values relative to the hardware's full scale (where 0 dBFS represents the max amplitude before clipping).



	Time 1		Time 2		Time 3	
	Input	Output	Input	Output	Input	Output
Orange	-	-	50	0	-	-
Blue	30	0	30	-20	30	0
Purple	0	-30	0	-50	0	-30
Green	-66	-66	-66	-	-66	-66



REGION OF INTEREST

After research and several iterations, we discovered that it's typically just the transient part of the loudest sounds that should move the window upwards, and by excluding the sound's tail we can achieve transparent volume attenuations. To achieve this result automatically, an option to track the envelope of HDR sounds has been added with a setting to specify, in dB, what should be the active range (region of interest) for each sound. The active range property defines, for each voice, the range in decibels from the sound's peak for which it will move the window.

Having control of the active range and the points of the HDR envelope provides control to craft exactly how the rest of the quieter sounds will be ducked down over time.

WWISE WORDS

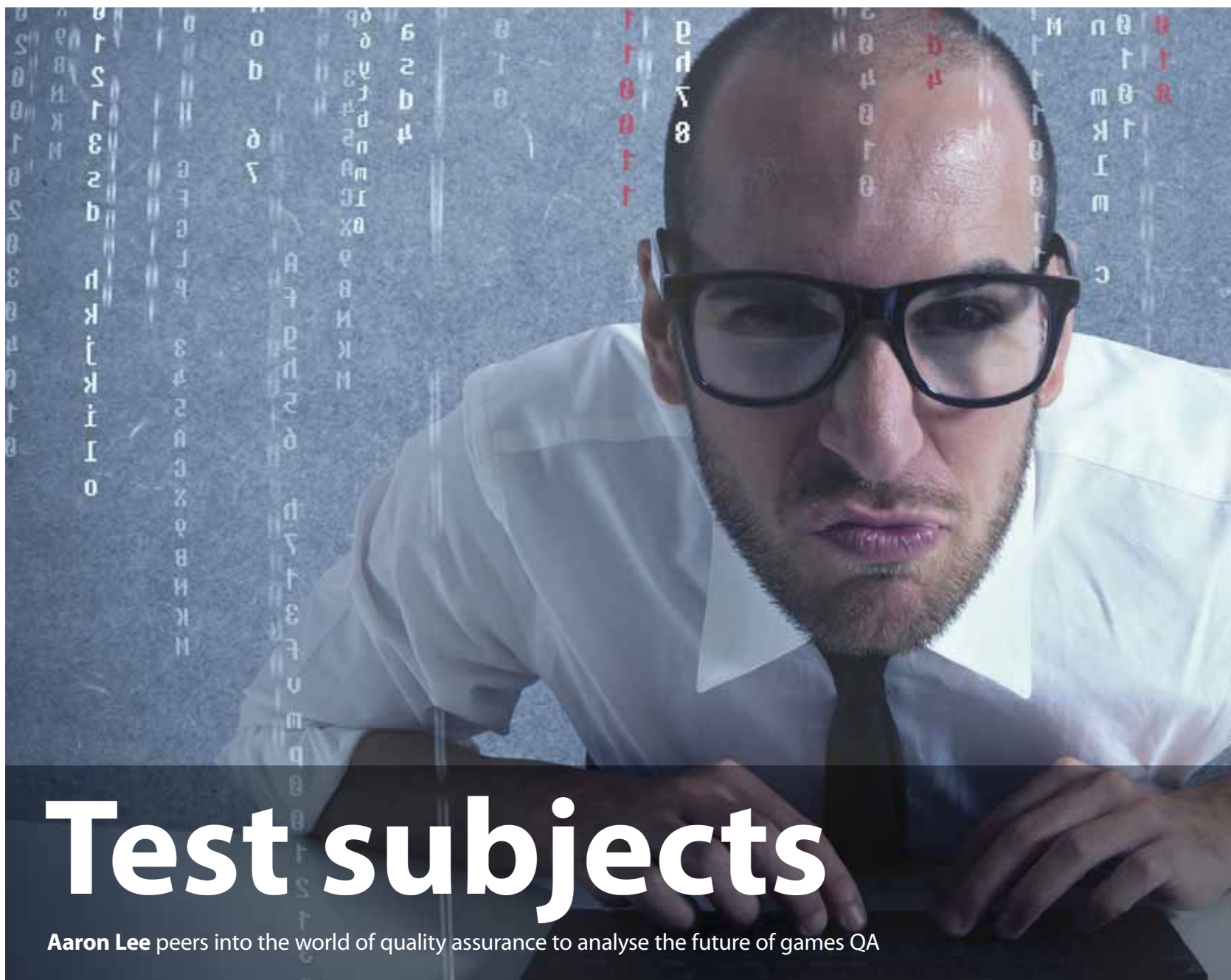
In the end, we're glad we've had the opportunity to work and iterate directly with a games developer to create this feature, which is introduced in Wwise version 2013.1. We're now confident that developers using HDR audio will benefit from having a transparent automated mix that always sets the loudest sound to focus and creates space in the mix.

There are more exciting HDR features available in Wwise 2013.1, such as the ratio and release time at the bus level, make-up gain, and loudness normalisation at the source level. A more detailed article would be needed for a full review of the HDR functionality. ■

Audiokinetic's Wwise software could enable sound designers to fine-tune their HDR audio (above)



Simon Ashby is VP products and co-founder of Audiokinetic, and would like to extend his thanks the team for their review and contribution to this article.
www.audiokinetic.com



Test subjects

Aaron Lee peers into the world of quality assurance to analyse the future of games QA

Automated testing – not depicted in this 'showy' main image – is one methods that QA firms such as Testronic and VMC are using to increase their efficiency

TESTING IS SOMETHING that every games should receive. But look on any retail website or app store and it's all too clear from customer reviews that this isn't the case.

Quality assurance firms strive to be thorough in their mission to give games the polish they need. They rid games of hurtful bugs and provide game studios with guidance to fix the holes that are holding their game back. They are the discreet lab coat-wearing assistants who 'test 'em to destruction' – only, without the lab coats.

Following our report on games localisation (*Develop 137*), which many of the same firms in this article also handle, we turn our attention to QA. With so many new games platforms, the sector is continuing to experience rapid change. The next generation is just starting to awaken, but are external QA firms excited by the new consoles and the triple-A projects they will herald, or do they see mobile as the source of their fortunes going forward?

QUALITY MATTERS

First things first, however. In the past, QA has typically been viewed as the 'unglamorous' end of games development. Some publishers have boldly – or perhaps foolishly – decided

that its not worthy of devoting time to, only for their product to feel the impact.

Testronic Labs VP of games operations and UK site manager Alastair Harsant says that things are different now: "QA has certainly matured as a service and has become an

“New platforms brought new testing ways, with constant updates and the need to reinvent certain methods.”

José Ramón Sagarna,
Triple A Testing

increasingly important and recognised part of the development cycle. With more social, online and mobile titles, there is an increased focus on customer retention rates as a measure of success. It is more important than ever to launch a perfect and bug-free title."

QA firms have themselves been put to the test in new ways over the last 18 months.

Unsurprisingly perhaps, it is mobile development that has proliferated many of the changes these firms face.

"Developers are focusing more on mobile quality assurance," confirms José Ramón Sagarna, head of testing at Triple A Testing. "Not only with end of development testing, but also with a full quality assurance plan usually reserved for main console titles."

Meanwhile, it's the rapid uptake of social games that Babel CEO Richard Leinfellner feels has affected the business most in terms of what is now expected of QA companies.

"Console and casual have been slugging it out, with console going for very few triple-A megahits, and lots of sequels as few are taking risks. QA for these is the same, but bigger than before, especially due to multiplayer being so important," he says. "Social is almost the total opposite; we see everything from tiny to big budget, lots of new IP, lots of languages, tons of handsets, it's really like the wild west. It's really fragmented with some jobs lasting literally two hours and others more like TV soaps, which just go on and on as new content comes in on a weekly basis.

"It's really like movies – or console – versus TV – or casual – in many ways, so we have a

INSIDER ADVANTAGE



PART OF THE challenge for external QA firms comes from publishers own internal teams.

Reflections lead QA Joseph Rogers (above) says there are many advantages to internal QA teams. The internal QA structure has been part of his studio for almost two decade now, so as well as experience, the team's proximity to Ubisoft's development team and its earlier involvement in projects means it can maintain a competitive advantage in terms of quality delivered and overall cost.

"Although in-house QA on some scale can work for all companies, it's obviously easier for larger companies. Having a large QA structure means you have constant and continuous production feeding and supporting this structure," he suggests, but admits there are weaknesses: "The biggest challenge is to manage change inside the structure. The benefits coming from experience and the multiple iterations of certain approaches can cause some bumps on the way to change – and there's no doubt our industry changes continually."

lot to learn from these media sources and many movie people now need to learn the cut throat world of TV."

TAILOR-FITTED

Leinfellner's comments echo that of some of his fellow QA practitioners. Based on what several firms have said, there seems to have been a marked reduction in the number of console projects that have been submitted for external testing. But this reduction has been countered by higher expectations from clients across alternative platforms and a need for more rigours testing as mobile and social titles become ever more ambitious.

This progression can be seen in the likes of the *Infinity Blade* series, *Galaxy on Fire 2* and *CSR Racing*, all of them graphically-accomplished 3D games that have been created for smartphones and tablet computers. And as the number of relevant genres expands, so too has the feature set for such games. It's not uncommon to see online multiplayer, be it asynchronous or real-time, and other additional modes appearing in mobile titles from the get-go. And announcements by companies like Havok at GDC last month to release free tools for 3D

mobile development means that we may see even more developers choosing to realise their visions in the third dimension.

What this has meant for QA is new relationships with developers and teams of varying sizes. Dealing with new clients that

“We have seen a significant transition in outsourcing requirements, and the console market seems less in need of external QA services.”

Harrison Baker, Testology

don't have huge budgets to spend has led QA outfits to adapt their own services to suit specific needs, as Triple A Testing's Sagarna explains: "Now, small developers don't need a huge budget to develop. New platforms brought new developing and testing ways, with constant updates and the need to reinvent certain methods or procedures. It is

important to be flexible and have an open mind to find a common ground between the project needs and the project costs."

This is something that chimes with Ben Wibberley, director of games at QA specialist VMC Game Labs.

"Established models are being challenged, which is blurring the lines between the traditional roles of development, publishing and distribution. Whilst we don't subscribe to the idea of the death of the publisher, the games business is moving from a business-to-business to a business-to-consumer model," Wibberley tells *Develop*. "New games companies and devices appear almost every week, and the business models are constantly evolving, so the key is being agile and continuing to stay on the leading edge of understanding our clients' needs. For example, we've successfully created an independent games client programme to specifically support indie games developers and ensure the high level of service that we expect ourselves to provide to all of our games clients."

The same is true for Testology, says project manager Harrison Baker.

"When we began to consider the opportunities with mobile platforms, it was difficult to ignore the requirements of the mobile developers," he says. "We wanted to ensure that our services were tailored to all client requirements – no matter the platform, or industry or team size. We wanted to be able to provide the very best QA services with every type of budget so that these companies could release applications with impressive stability and functionality."

Evidently, QA is not longer about 'one size fits all', but a tailored approach to clients' needs, whatever their situation.

AUTOMATED TESTING

Just how QA firms are performing their task is also evolving in terms of services they have and the technology they use.

Along with VMC's indie programme, Testronic Labs has enlisted Player Research to bolster its UX testing, and has opened a special UX lab at its Burbank office, while Babel has launched a dedicated app testing and localisation service in TestMyApps. These services are intended to improve the flexibility and specialism on offer.

Testronic's Harsant says its projects have longer tails, and over time they have been handling more complex projects, which has often necessitated scheduling changes. In conjunction with this, and likely as a result, he says there has been more interest in the company's automated testing capabilities.

"Interest in automation is also increasing," he says, though he doesn't feel the technology is ready to replace human testers just yet. "While we have expertise in this area, automation remains a valuable aid to certain testing, but not a solution to all procedures. The human element remains prevalent, and where appropriate we provide on-site testing operatives for some major clients."

Automated testing generally refers to code or data that is used to verify the functionality of portions of a game without any user interaction. It's an area that Wibberley says VMC is doing a lot of work in with some high-profile clients.



Top-to-bottom: Alistair Harsant of Testronic Labs, Anna Wojewodzka of Universally Speaking and Ben Wibberley of VMC Game Labs



Top-to-bottom: Harrison Baker of Testology, Richard Leinfellner of Babel and Rupert Young of EC-Interactive

"Test automation is often sold as a 'silver bullet' to solve all manner of software development problems. However, we view test automation as a tool used by talented, creative people to support the development of quality games. Repetitive tasks are automated to free up valuable developer or tester time for more critical tasks. Ideas about effective offshoring or outsourcing are standard practice now and that will not go away, but more bodies isn't always better. The most agile organisations are moving towards tools and test automation at pace."

ON TO THE NEXT ONE

Automation is certainly something that will continue in step with the demands of the coming generation of games consoles. But with the rise of mobile giving QA firms a new stream of clients, the significance of console development to their businesses is in dispute.

"Our business has seen a significant percentage increase in favour of mobile platforms," offers Testology's Baker. "We will anticipate Testology being heavily involved in next generation games console testing, but to what extent will be determined by demand. In the past two years we have seen a significant transition in outsourcing requirements, and the console market seems less in need of external QA services."

A gradual move toward in-house QA teams by major publishers (See 'Insider advantage') would certainly corroborate Baker's view.

Babel's Leinfellner also has reservations: "Right now, it's hard to tell where next-gen will go. The hardware is exciting and the potential for content is too. However, the development costs are also scaring developers and publishers."

"Personally, I am a little concerned that only the big guys will be able to afford it and none of them will take any risks, so expect

Automation remains a valuable aid to certain testing, but not a solution to all procedures. The human element remains prevalent.

Alastair Harsant, Testronic Labs

sequels galore. That aside, it appears both Sony and Microsoft are choosing a PC architecture. This clearly will help developers make the most of their technology investment, and since we already know how to test in the connected and social PC world, it will put us in a great position."

"With the current disruption in console, there are definitely less projects around and, of course, at this stage of the console cycle this is to be expected. We are experts in testing on all platforms and want to maintain

a mixed portfolio of mobile, online and console, but maintaining that balance can be a challenge," admits Anna Wojewodzka, operations manager of Universally Speaking.

By contrast, others have a more pragmatic opinion. Triple A Testing's Sagarna says its a fact that consoles are "here to stay", so training and familiarising themselves with the new architectures will be a recurring challenge. Harsant says the next-gen consoles are "very important" to Testronic's business, while VMC's Wibberley takes the view that "as long as there is a market and our clients are making games for any device, we will provide test support on that device".

Rupert Young, managing director of EC-Interactive has taken stock from the current generation and feels that is "hard to envision any hardware completely reinventing the way we do QA or fundamentally changing what is expected from us as a QA provider".

It remains to be seen whether traditional console publishers and developers will return in significant numbers to external QA firms.

But it's Young's final thought that holds true for this sector: "By far the greatest challenge we face, when we're focusing so closely on our existing set of platforms, is to make sure we don't lose sight or get left behind when the next big platform or QA service opportunity surfaces. Making sure our staff are continually retrained and deciding on what equipment to source is a never-ending challenge, but one that we relish." ■



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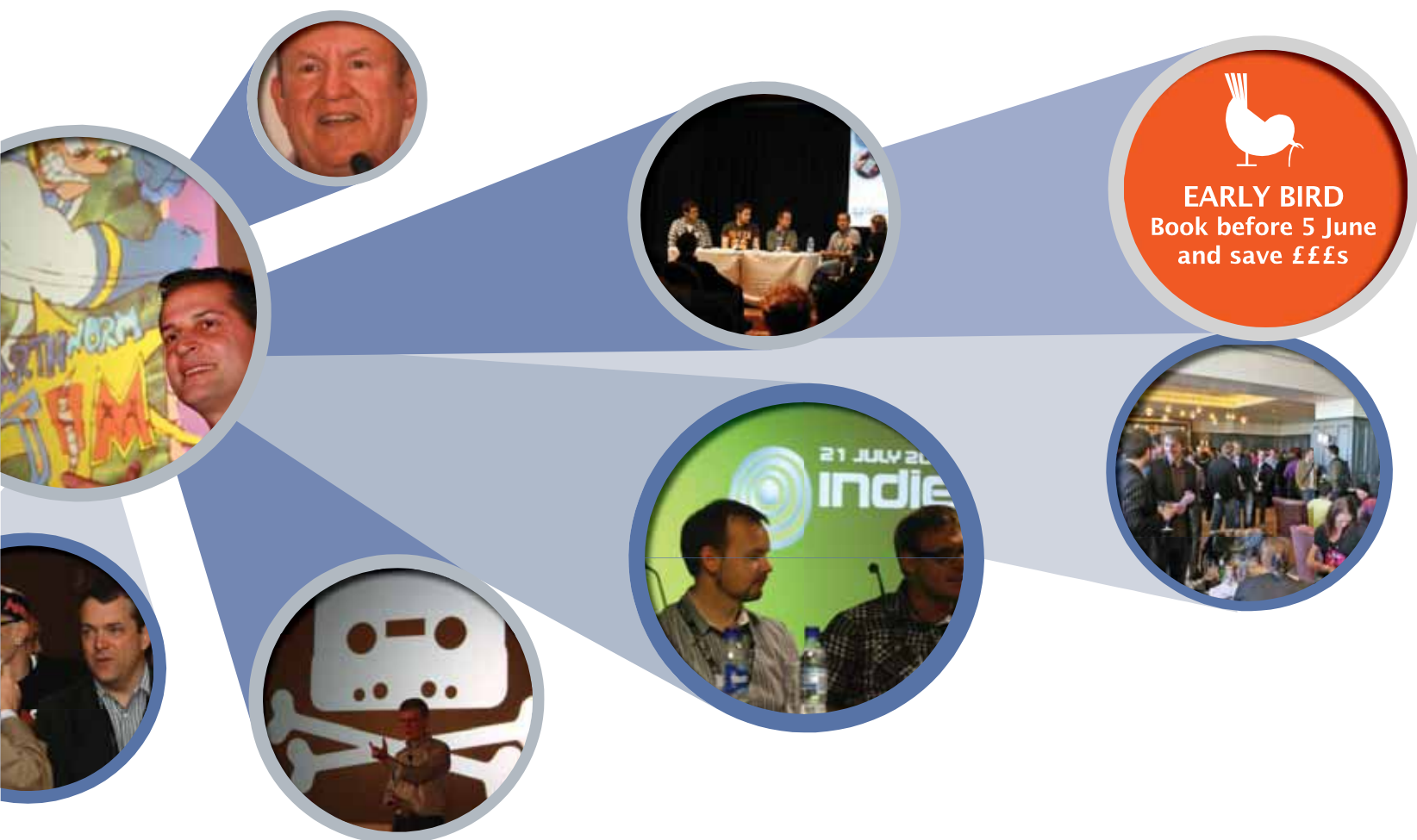
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Bonus levels

The wage bonuses paid to bankers have come under great scrutiny of late. But what role do bonuses have to play in games development? Zoë Mode's **Paul Mottram** considers the perks

Main: Far from 'super mushrooms' for all, Paul Mottram says the bonus culture in the games business has withered away

BONUS SCHEMES ARE very much in the spotlight at the moment.

It's the dark side of capitalism, with obscenely inflated payments rewarding risky behaviour, and promoting a culture of greed. Despite a worldwide economic malaise, there is an industry where coke-fuelled parties, champagne baths and lunchtime visits from exotic dancers are the norm. Against a backdrop of cuts to social services and spiralling unemployment, high-performance cars and trophy partners abound. Ladies and gentlemen, I give you the games industry...

It's fair to say that many industry veterans might not recognise the above description, and that's for a very good reason. It's totally untrue. Complete balderdash in fact.

Even in the halcyon days of the games industry, bonuses were never on the same planet as what your average investment banker or commercial lawyer has come to expect as pin money, and, in recent years, most workers in the games industry regard simply holding onto their job at the end of a project as a bonus.

Now this is a terrible situation. As the lack of cash reward has become a standing joke among the cynical wags that inhabit our industry, bonuses have lost the power to motivate. As a result, bonus scheme announcements are often greeted with disbelief or derision by team members embittered by too many broken promises over the years.

HOW DID WE GET HERE?

Blame for this current lethargy is shared industry-wide. I'm sure most bonus promises given in the last decade were well intended, but in reality the end of many projects sees companies with empty coffers and no means to fill them. Or, if there is a small pot of money left over from dev costs, there are surely many better things to spend it on than lowly staff members, right? After all, that's what the 'discretionary award' part of the small print is for.

Wrong. Bonus schemes, when used correctly, can have powerful effects and if they are to have their intended results then staff need to have faith – they need to know that if they deliver on their part of the deal, the company will cover their end.



WHY BOTHER WITH BONUSES?

The rewards of bonuses to staff are obvious – at a very basic level they give them more money. But there are other bonuses too – they make them feel valued and respected by their company. That in turn makes them happier with their career.

So what are the bonuses for your company? Many studies have shown that happy people make for a pretty good workforce. They are more motivated and willing to put in extra effort to make the thing they are working on faster or better, or both. This can only be a good thing for your company and its customers.

As an industry we demand a lot – we frequently ask developers to work extra hours and make personal sacrifices, and often, the only motivation is the potential of a future for them at the studio. Times may have been tough for independent studios in recent years, but this type of threatening motivation is just not sustainable. We need to look instead at how we reward developers and grow as an industry. We need to be more creative in rewarding staff, from their working environment to company benefits.

WHAT ARE THE PERKS?

For now, let's just talk bonuses. This is something we've been addressing over the last year at Kuju, trying to reinvigorate a scheme that people had lost faith in and create something that not just rewarded the team, but gave them renewed faith in the company and their own contribution.

We reward the team for being on time, achieving a certain Metacritic rating, and give them a share of any royalties we may receive. There are several reasons for this approach:

REDUCED SLIPPAGE

Keeping a development team on a project for extra months can be financially crippling – an on-time completion bonus will almost always be smaller than the cost of even a small project over-run. Bonuses decrease in value each week a title is late to reflect the extra costs incurred but ultimately that money pales into insignificance compared to the slippage – not to mention the damage done to the publisher relationships.

This is a terrible situation. As the lack of cash reward has become a standing joke among the cynical wags that inhabit our industry, bonuses have lost the power to motivate.

BOOSTED QUALITY

Metacritic can be argued as a good and a bad thing for games, but for developers it matters. Most publishers judge developer quality from their aggregated scores and a large number of consumers look to the site to decide whether to purchase. So it makes sense to have a percentage of the team bonus reflected in the Metacritic score.

All projects are different so targets are viewed on a per project basis – whilst I hope to see a fitness game get 95 per cent one day, it doesn't seem too likely. But encouraging everyone to think about the quality of the

work they are creating, since it has a direct financial impact on them, can only be of benefit to each game as well as the overall studio reputation.

LOW-RISK REWARDS

Royalties are a bonus for the studio too, especially on a publisher owned game that may need the advances recouped. If you're lucky enough to start seeing some, then they should be shared. This is, after all, where big money can be made and if the company is making millions then the team that made it happen deserve a share in them too. Given that you pay nothing if no royalties are earned, it is a low-risk way of rewarding and incentivising staff.

HOW DO WE MAKE THEM WORK?

The key to a bonus scheme is to offset the terms at the start of development – coming up with a bonus at the end to retrospectively resolve problems is pointless – plan them into budgets from the get-go. At Kuju we decide upon a fixed percentage of the development budget, which is then distributed upon completion according to a clear set of pre-defined criteria. If the team meet the criteria then they get the bonus. Ultimately, if the game is late and not very good, you're not going to be paying out bonuses, but if the team do deliver a great game on-time they should be rewarded for doing so.

IT'S A COMMITMENT

A bonus scheme can only get full buy-in from the team once it pays out, so committing to it is essential. We've been lucky enough to pay out several bonuses to our teams over the last year. No-one has been made a millionaire yet, but we've already seen unexpected new dynamics arise in the studio.

Not all project roles are as glamorous or creatively challenging as each other, but knowing that the bonus pool is linked to the success of the game has seen people stand up and take control of areas they may previously have shied away from – certification tasks have never seemed so appealing. The other great perk is team unity – when it comes to someone not pulling their weight, a team with a common objective can be a much more powerful motivator than an angry producer.

COST IMPLICATIONS

Some may question the fact that a bonus will affect the profitability of a project, force you to increase your charge out rates to publishers or deliver with a smaller team. How you decide to address this is down to each company, but at Kuju we've decided to absorb the cost ourselves rather than push it onto the publisher. It all comes down to risk management, and if you can ensure that publishers, shareholders and the development team all have their interests aligned, then everyone benefits and the cost is more than worth it. ■



Paul Mottram is studio head at music, party and social gaming specialist Zoë Mode. A former programmer and producer, he leads Kuju's Zoë Mode team from its Brighton base. www.zoemode.com

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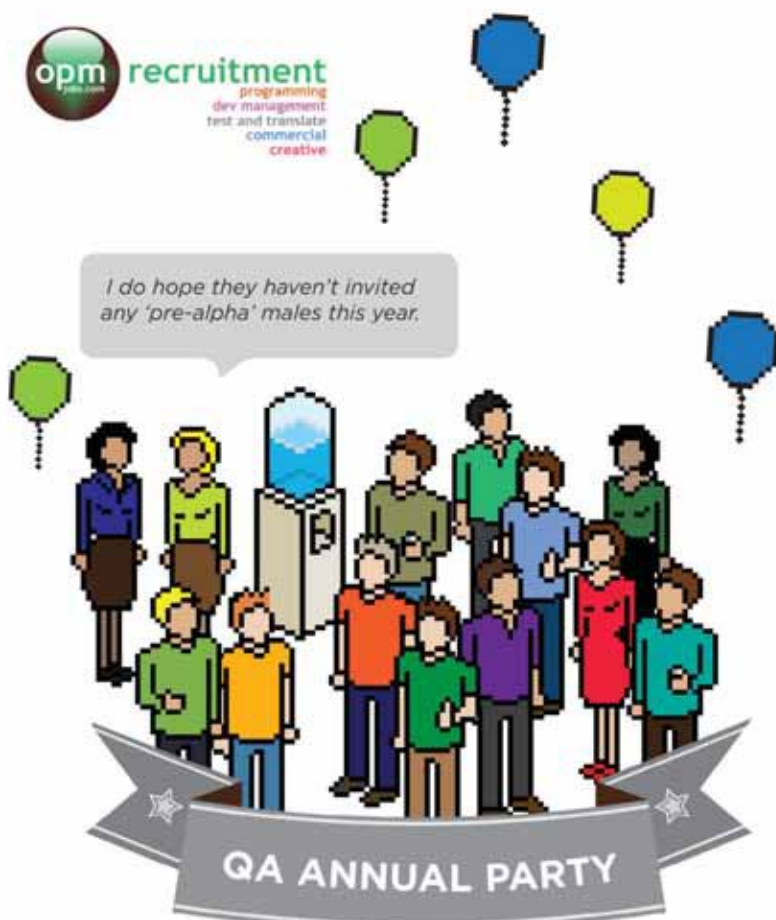
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I do hope they haven't invited any 'pre-alpha' males this year.



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Inside workstations

Develop lifts the lid on HP and ALT Systems' new games development-specific hardware, p36



Modo 701's
new features
explored
p40



A journey
through
sound
p42





ALT Systems go

HP, ALT Systems and a host of others have joined forces to offer a range of games development-optimised workstations. **Will Freeman** takes a look at what they offer in contrast to a custom setup



HP's Jeff Wood (top) and Jim Zafarana (above), and the Z series' technologically muscular Z820

OWNING A WORKSTATION is a tempting proposition for any developer. After all, who wouldn't want a technologically muscular, robust and capacious alternative to an overclocked PC?

As it happens, many shy away from the idea of taking the leap into workstation ownership, intimidated variously by preconceptions about price, concerns about integration with games-specific middleware, and the alternative advantages of building a custom setup.

But HP, that giant of both consumer and industry electronics equipment, has, in collaboration with various software providers and an integration specialist, launched games development-specific versions of some of its most popular workstations, elsewhere found serving the likes of architects and animators.

THE POWER OF SOME

Bringing on board Autodesk, Epic, 'full service systems integrator' ALT Systems and electronics specialist PNY Technologies, HP has crafted several offerings that hope to give developers an affordable, cohesive and customisable development solution.

As revealed at GDC, HP offers a trio of options as games development-specific platforms – the all-in-one HP Z1, the powerful Z820 and its more streamlined cousin, the Z620. Each has, with ALT System's help, been

“It's about matching the speed of thought; that's what we're striving for, and that gives developers freedom to create.”

Jim Zafarana, HP

assembled to be optimised for either Unreal Engine or Autodesk users, providing a union of hardware and tools that promises to perfectly serve games makers.

And that, claim the HP team behind the workstations, is vital in offering developers the reliability they need.

"These systems are designed for mission critical environments," explains Jim Zafarana,

HP's vice president and general manager, speaking with *Develop*. "If you're doing a software compile over multiple days, the worst thing that could happen is it fails on you; perhaps the BIOS goes bad or the graphics card has problems.

"The components in an HP workstation, starting from ECC memory, or 'error-correcting code memory', which self-heals as things go on, to hard drives that are enterprise-grade rather than consumer-grade, and the BIOS that have been tested, and the solutions that have been certified; these things are vital, whether you're a big company or a small company.

"You can't afford to go down, and our workstations are designed with that in mind. Our workstations are the poster child for performance and reliability."

That's all well and good, but can such a solution really offer a platform to rival a custom setup precisely built to the needs of an individual studio? HP's staff think so. For starters, their games developer offering can be tailored in conjunction with ALT Systems,

"I would say building your own workstation is still an option for studios, so if they want to

HP's games development
tailoured Z1 workstation
opens up for easy
customisation



build they're own workstation, I'm happy for them to do that," explains ALT System's president Jon Guess. "But what we're offering is a value proposition where we integrate all the parts and pieces for them, offering a workstation that is tailored to work with the Unreal Engine and Autodesk products, and if they don't have the experience as expected, they have a single point of contact to help them achieve what they want."

And that single contact point is important here. Those who build their own system will not only have to handle integrating each hardware and middleware option themselves, but, when problems do arise, have to liaise with numerous companies' support services. For anybody who has found themselves in that situation before, it can make even the most convoluted call to a bank seem like a day well spent.

A TRUMP CARD

The debut of HP and ALT Systems' latest offering also introduces, for the first time in the games business, the opportunity to integrate PNY Technologies' new GeForce GTX 680 XLR8 Edition graphics card, which many will see as a significant boon to those eyeing the coming consumer hardware from Sony and Microsoft.

But that doesn't mean the Z series of workstations isn't conceived to be the exclusive reserve of the globe's biggest studios, and HP insists indies and mid-sized teams shouldn't be too quick to assume that such powerful hardware is beyond their financial reach.

"Even the indie studios out there are using our workstations" states HP's vice president of worldwide marketing Jeff Wood. "Probably

the most visible out there is the Bandito Brothers, who were instrumental in bringing out *Act of Valor* last year, and they really relied on the HP studios, even as a small studio, to get their productions done. This is something available to that kind of studio."

And according to Zafarana, whatever the size of your studio, HP's games development workstations can offer more or that perennially desirable creative freedom.

"I think the challenge for developers is overcoming the big problems, and getting faster answers," he says. "Every industry is trying to do more and design more, creating robust products, and improve graphics, so I'm talking big data and big design."

"A workstation can chew that kind of thing up and spit it out, so you can just sit back and design and develop without hesitation or restriction. It's about matching the speed of thought; that's what we're striving for, and that gives developers freedom to create."

INSIDES OUT

Under the casing of each of HP's Z series workstations nestles a tidy example of product design, where components can be swapped in and out with the simplicity a consumer could grasp, and ample space is available for expansion. The machines run quietly, hide in their guts enough DDR3-1600 RAM to satisfy the most demanding projects, and do much to make even the most efficient gaming PC seem rather passé.

Yours might be the studio that is better served by its own hardware setup, but certainly, for those looking for a games development focused powerhouse, HP's offering is well worth considering. ■

www.altsystems.com

UNDER THE BONNET

A look at the options on offer from HP



Put simply, there are three games development focused workstations from HP, each available either optimised for Autodesk products, or for Epic's Unreal Engine. In each case, ALT Systems has

handled integrating the hardware and middleware within each workstation, making sure it all runs in unison, and offering a single point of contact for support. The three workstations are:

HP Z820

- Windows 7 Professional 64-bit as standard
- Dual Intel Xeon E5-2660
- 32 GB DDR3-1600 (8x4 GB) RAM
- PNY GTX 680 2G
- 300 GB 10K RPM SAS
- 2x 600 GB 10K RPM SAS
- 16X SuperMulti DVD+/-RW
- 1125W 90 Efficient Chassis



HP Z620

- Windows 7 Professional 64-bit as standard
- Intel Xeon E5-2620
- 12 GB DDR3-1600 (6x2 GB) 1 CP
- PNY GTX 680 2G
- 500 GB 7200 RPM SATA first HDD
- 2 TB 7200 RPM SATA second HDD
- 16X SuperMulti DVD+/-RW
- 800W 90 Efficient Chassis



HP Z1

- Windows 8 Pro Downgrade to Windows 7 Professional 64-bit as standard
- Intel Xeon E3-1245v2
- 4 GB DDR3-1600 ECC (2x2 GB) RAM
- PNY GTX 680M 4G
- 256GB SATA Solid State Drive
- 8X SuperMulti DVD+/-RW (Pre-order for June 2013)



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KEY RELEASE

Will Freeman looks at the latest update to Luxology's Modo modelling tool

What is it? Modo 701 is a modelling, painting and rendering tool renowned for its sculpting abilities, that also offers animation abilities

Company: Luxology
www.luxology.com/modo



Modo 701 (main) is an affordable modelling tool that streamlines the games creation workflow, says Luxology's Shane Griffith (above)

THE MODO MODELLING, painting and rendering solution has long served artists across numerous creative sectors, and at this year's GDC, details of the latest version were made public with the release of Modo 701.

The tool's creator, Luxology, has put out a technology that it says will make a significant impact at games studios, particularly where workflows and efficiency is concerned.

At the heart of the new features introduced to Modo 701 is a completely revised procedural particle engine with a preset workflow. And new audio playback, a sound channel modifier and schematic improvements to help reduce scene graph complexity have debuted in this latest version.

But according to 701's product marketing manager Shane Griffith, the emphasis on reworking Modo this time around has been about fine-tuning over reinvention.

"Modo was already a really complete content creation tool, so we're just continuing to fill out the application, adding in new pieces with 701, and the particles in particular, which is significant," says Griffith.

"But we've also been finishing out the dynamics system and everything else there. With 701, as before, Modo remains a complete, approachable and affordable solution. A lot of what went into 701 was refinement. We really considered what the customer feedback was, and looked at their workflows. We've really tweaked and enhanced as a result of that input."

WORKING ON WORKFLOW

Luxology's message, then, is that Modo 701 is the result of much polish and subtle reworking, but what will that mean to the games developers already familiar with

Modo 601, and more importantly, how will it impact their daily grind?

"Immediately, it will be noticed in the performance," insists Griffith. "A lot of the existing Modo systems went through deep refactoring and reworking for performance. There's been a lot of effort with interactivity, and sculpting in particular is substantially faster than it was in the case of 601."

"Outside of that, the effort with the workflows and how the user works with in

"A lot of what went into Modo 701 was refinement. We considered what the customer feedback was, and looked at their workflows."

Shane Griffith, Luxology

the schematic view; that has all become a lot faster and a lot more intuitive, in terms of how the content is really revealed to the artists. There will be a huge impact on the day-to-day workload for our users."

Savings on time and workload will come as something of a godsend to busy artists, but the allure of the revised particle system remains Modo 701's head-turning feature.

Modo 701 has been designed so the preparation and refinement of simulations of particles is as streamlined as possible, thanks to the introduction of a preset browser to accelerate layout and setup tasks. Meanwhile, the underlying framework of the particle system is built around nodes to allow for more elaborate set-up processes.

"The particle system is pretty much entirely new in its approach," offers Griffith. "The big difference is that it's fully integrated with the dynamics system, and the dynamics system itself has been reworked to be much more core and internal to the product. So now you can have particles blasting other objects and knocking them down, or other objects interacting with particles, with those particles bouncing off them. It's a really integrated system, and it's really robust."

JUMP IN THE LINUX

Beyond the feature set, as well as the established Mac and PC versions of Modo, a beta of a Linux build of 701 is well underway, and as Luxology and its partner company The Foundry look forward through a changing market, the tool is being adopted by an increasing number of smaller studios.

Typically popular with larger organisations, and especially in their modelling departments, Modo has for years been seen as a tool for pure, high-end original content creation.

"But there's also those smaller independent development studios, and for them outside of modelling Modo is a complete solution, and in a lot of cases it's about a third of the price of the big competitors," concludes Griffin. "It's a great, affordable solution for them. Its runs on Mac and Windows and it's coming to Linux, so it's out there on a lot of different platforms they need it on."

So, whether you're looking for a triple-A suitable sculpting tool for your studio's modelling experts, or an end-to-end middleware for art, animation, effects and rendering, 701 is worth consideration, distinct as it is among the plethora of options. ■

MICROSOFT SPOTLIGHT

Anna Marsh recounts how her kung fu title was given a new shot at reaching mobile gamers with the Windows Phone 8 team's help

Buddha Finger

Developer: Lady Shotgun

Who are they? A co-operative of experienced freelance games developers founded by three mothers in November 2011

What is it? A twitch action fighting game that was critically acclaimed on iOS, and is making the leap to Windows 8
www.ladyshotgun.com



THE RISE OF mobile platforms has led many developers to leave their roles in commercial development in favour of projects that give them greater flexibility.

That was certainly the case for Anna Marsh, who was enamoured by touch screen and the possibilities it presented, and started her own virtual studio, Lady Shotgun, when she became a mother for the first time.

"I was itching to do something different from those massively long console projects, to make games that felt great to play on a touch screen," Marsh tells *Develop*. "That was the seed of *Buddha Finger* for me – something that would really feel good on a touch screen. I like focusing on game feel and I think touch screens give us something genuinely new there."

Buddha Finger was Lady Shotgun's first title. Inspired by kung fu and 1980s action films, it's twitch action meets fighting, and the game's 'punk' aesthetic adds to its home-grown, tongue-in-cheek feel.

"We had a great laugh with the aesthetic and narrative," Marsh says. "There's a section where you help a woman in labour give birth to her baby with your awesome martial art technique, you fight a car, the lady boss is called Mai Shirona [in reference to The Knack's 1979 song 'My Sharona'] – we had a great time making the game, basically. You don't get to have a sense of humour in triple-A, which is another point in indie and mobile's favour."

BUDDHA FORGOTTEN

The decision to release *Buddha Finger* on iOS initially was because that was the platform Marsh and her small team of freelancers had the most experience on. But, as Marsh

explains, getting on to the App Store doesn't guarantee instant success.

"We did discuss doing cross-platform from the get-go, but finally it seemed like the best decision to get the first title from Lady Shotgun finished in as timely a manner as possible. Which had pros and cons – we got somewhat buried on iOS because, as you know, visibility is so difficult there. But it did let us prove our abilities to make a compelling game experience and it's on the strength of that version that Microsoft were keen to speak to us."

Microsoft loaned us hardware for the W8 build, which, when you're a tiny independent developer, is super helpful.

Anna Marsh, Lady Shotgun

Marsh says it was the enthusiasm from Microsoft staff that led Lady Shotgun to make its first ports for Windows 8 and Windows Phone.

As part of the agreement, Microsoft recommended some changes and additions to the game from their experience of what customers are looking for. For example, they were keen to have a game that parents could pass to their small children to play, so Marsh and her team altered the few images that pushed its age rating up, such as cartoon images of alcoholic drinks, to make it suitable for children over three. They also added an easy mode which slows everything down so

it's much easier. "That's something we had overlooked, and it's not something you'd get from analytics alone," offers Marsh.

And that was just the beginning. "They loaned us hardware for the W8 build, which, when you're a tiny independent developer, is super helpful," she adds. "And we've had access to a technical evangelist who's always available by email to help out with code and tech issues – especially with getting the game working on both the ARM and x86 chipsets."

LIFE BEYOND IOS

In reflection, Marsh says her experience with Microsoft has been a positive contrast to the 'big business' approach she felt while in triple-A development. For instance, she believes an issue Lady Shotgun encountered, and reported, related to their game being a non-Xbox game has now been incorporated into the submission rejection feedback, so others devs with the same problem will get precise feedback on how to fix it.

"The number one plus point has been the ability to talk to Microsoft. You find out very quickly on mobile that the real factor in making sales is being featured by the platform holder, so simply the fact that someone got back to us to discuss what they look for in a featured product was great," she concludes. "The great thing for me has been to realise just how much life there is beyond iOS for mobile titles. Certainly, if indies are in the same position as us of having released a game that's been a critical success, but haven't had the luck to be featured by Apple, you don't necessarily need to write the game off."

www.ubelly.com/2012/12/announcing-ubelly-indie-gaming-hub



Being able to communicate with a platform holder was a huge help for Anna Marsh (above) in making *Buddha Finger* (main images) for Windows 8 and Windows Phone

HEARD ABOUT

John Broomhall talks with the audio team behind Journey's award-winning sound design

Journey

Developer: Thatgamecompany

Publisher: Sony

Platform: PS3

uk.playstation.com/journey



Keith Leary (above) says Journey's sound has been carefully blended to elicit the right emotional response between two players (main)

KEITH LEARY IS music manager at Sony Computer Entertainment America's Product Development Service Group, and he's recently had cause to celebrate.

That's because the work by him and his colleagues on Journey's audio recently scooped two sound-focused video games BAFTAs. Leary worked as score producer and mix supervisor on the oft-lauded Journey, and here discusses his work on the critically celebrated PS3 game.

Congratulations on winning both Original Music and Audio Achievement BAFTAs among the five in total that Journey picked up. Why do you think the game has been so well received and its aural experience garnered so much praise?

Keith Leary: Firstly, the story, influenced by The Hero's Journey, is a universal story that resonates with everyone. It's about discovery, learning, experiencing and understanding who you are and what your purpose is.

Secondly, the emotional highs and lows seem to have an almost spiritual impact on the player. Thirdly, the empathy you feel when you meet and share your journey with another player is uncanny. This is one of those very rare projects where all the stars aligned perfectly. The brilliant game design, art, sound and music all came together to create something magical.

I think one of the main reasons Journey's aural experience works well is that no sound or music is there for its own sake; there's a reason for every single sound and note that plays. It's not about the quality and appropriateness of the sound design and music; it's all about eliciting the right emotional response.

There's also a psychological aspect to the soundscape where we introduce certain instruments and sounds in such a subtle way that players generally won't actually 'hear' them because they're so tied into the gameplay. For example – and there's a spoiler alert here – you only hear the harp when you meet somebody and get close to them. If you asked players whether they noticed, my guess would be they had no idea, but, psychologically, the harp really contributes to the emotional bond created between two players develop.

“I think one of the main reasons Journey's aural experience works well is that no sound or music is there for its own sake.”

Keith Leary, SCEA

There's a sense of cohesion about the sound and music, like the sum is greater than the parts. How did that come about?

Leary: Composer Austin Wintory wrote a suite of pieces early on in an effort to find the right tone and feeling to support the story's emotional arc. Lead sound designer, Steve Johnson worked closely with Austin throughout. Great effort was made to complement what each other was doing; everything had to fit the aesthetic.

For example, at a particular moment there might be some low rumbling sounds so music would stay away from those frequencies. Sounds with tones were chosen carefully to

complement music. In the snowy mountain, music was used as a textural element, like an undercurrent to the wind, which then got gradually swallowed by the storm. There are times where music drops out completely for a sound-driven moment, and other times where music is the storyteller with sound playing a supporting role. These were conscious creative choices. I have to admit having three years to get it right helped.

–Another great example of collaboration between sound and music is the player singing/shouts – a combination of processed bird chirps, along with musical and vocal elements provided by Austin. Pitch sets were chosen for each game section so they harmonised with the score. Variations were created for your character versus your companion so each has their own accents but speak the same language. These sounds evolve to reflect the emotional arc, feeding into whether the player feels more empowered or weak at certain points along their journey. Again, it's very subtle, but it supports the emotional response.

What kind of interactive music approaches are used in Journey? What's going on under the hood?

Leary: We used several adaptive music approaches in Journey. In certain areas we took a layered approach, allowing the music to build organically as the player progresses. Other times we branched from one segment to another, the main philosophy always being to transition in a musical way. It might mean waiting a few bars for a musically appropriate place, and/or creating a special musical phrase to go seamlessly from one piece to another – all beat synchronous.

As mentioned earlier, scoring the multiplayer experience was particularly effective, with harp and viola only appearing when another person is present, making the music a richer experience and thereby contributing to the emotional bond.

Of course, we didn't know when two people would meet, so harp and viola had to play counterpoint throughout the entire score. A painstaking amount of detail went into making the music adapt smoothly at every turn, with the ultimate goal being to create the illusion that it's all one seamless performance from beginning to end. ■

JOURNEY'S AUDIO TEAM

Game Director: Jenova Chen

Score Producer/Mix Supervision: Keith Leary

Composer: Austin Wintory

Lead Sound Designer: Steve Johnson

Music Implementation: Monty Mudd and Ted Kocher

Audio Programmer: Martin Middleton



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UNREAL DIARIES

Unlocking Epic Games' new Unreal Engine 4 Blueprint visual scripting system

LEGIONS OF DEVELOPERS rely upon Unreal Engine 3's Unreal Kismet, which is used to quickly build gameplay prototypes and level events. With Unreal Engine 4, Epic introduces Blueprints, a revolutionary new visual scripting system that replaces Kismet and provides a massive leap in functionality and productivity for projects large or small.

Blueprint visual scripting empowers artists and designers like never before by providing access to low-level engine functions and the

ability to rapidly prototype without having to write a single line of code.

Supported by built-in debugging tools and enhanced by Unreal Engine 4's brand new interface, Blueprints deliver all the power of Kismet along with the ability to visually script reusable components for gameplay, AI, player controls, geometry creation and numerous other features. These components can be used as pervasive parts of the world, so when a Blueprint is updated, the change

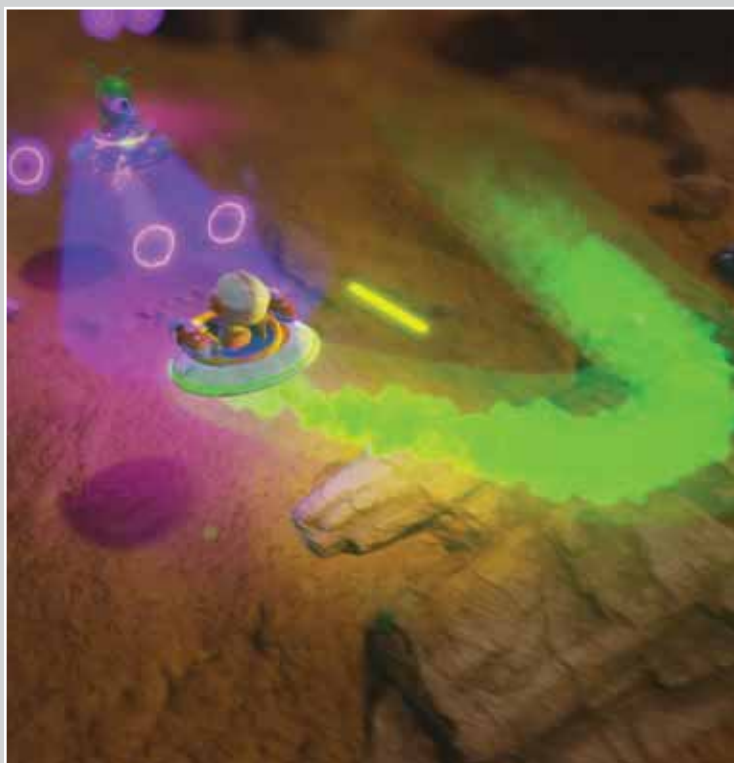
affects all parts of the game where Blueprint is present.

Blueprints can be utilised for gameplay behavior, animation blending, level building and design, and as mentioned before, object construction. Epic is only scratching the surface of what Blueprints can do so far. The only limitation is one's imagination, and it will be exciting to see how Unreal Engine 4 licensees unleash their creativity with the new toolset. ■

Below: A selection of demos showing some of the results that can be created using UE4's new visual scripting system



EPIC RECENTLY PRESENTED the *Infiltrator* real-time demo to highlight Unreal Engine 4's latest features. The vehicle conveyor apparatus shown here is a Blueprint. The demo, which is available to view online, shows off adaptive detail levels, temporal anti-aliasing and dynamic lighting to name just a few.



EVERYTHING IN THIS alien hovership game, which was created by Epic's principal artist Shane Caudle in his spare time, is made entirely with Blueprints. This includes the HUD, input handling, animation, gameplay controls, enemy AI, character setup, weapons, projectiles, and effects.



UNREAL ENGINE 4's new Persona animation system provides state support and animation blending. Blueprints enable quick adjustment of speed, transitioning between states, fine-tuning a character's pitch, yaw and much more.

UPCOMING EPIC ATTENDED EVENTS:



E3 Expo 2013

June 11th to 13th
Los Angeles, USA

Develop Conference 2013

July 9th to 11th
Brighton, UK

ChinaJoy 2013

July 25th to 27th
Shanghai, China

Email licensing@epicgames.com for appointments and sign up for Epic's newsletter at unrealengine.com.

MADE WITH MARMALADE

Marmalade worked as games developer and tools provider to build *Signal to the Stars* using new Lua-based RAD tool Marmalade Quick

GAME: Signal to the Stars
DEVELOPER: Marmalade Game Studio

PLATFORM: Android, BlackBerry, iOS

WHY MARMALADE MATTERED: Developed using the RAD toolkit Marmalade Quick, *Signal to the Stars* was produced and released cross-platform in record time

www.signaltothestars.com


Marmalade's Massimo Caporale (top), and Mike Barwise (above), and (main images) *Signal to the Stars*, developed in tandem with new tech Marmalade Quick

PRODUCING A NEW set of development tools carries its own challenges, whether it's a simple plug-in to fulfil a specific identified need on a project, or a full-featured system.

Marmalade Game Studio – recently rebranded from Ideaworks Game Studio – found itself straddling the line between tools provider and games developer for the production of *Signal to the Stars*, released in March across four stores simultaneously: Apple App Store, Google Play, Amazon Appstore and BlackBerry World.

Signal to the Stars was produced using the Lua-based RAD tool Marmalade Quick, which is now available free with all Marmalade licence types – the aim being to use the creation of the game to drive development of features within Marmalade Quick, and vice-versa.

QUICK OFF THE MARK

Mike Barwise, creative director on the project, is positive about the overall impact of the process: "It certainly adds an extra element of challenge to a project when using an environment that's still under development, but having the ability to inform the functionality of Marmalade Quick was extremely helpful in creating *Signal to the Stars*."

The puzzle-based gameplay, the idea for which came from a staff game jam at the studio, was iterated upon by a small team of artists, programmers and designers over a matter of weeks, with the cross-platform elements being progressively worked in as they were made available by the SDK team.

Delivering the game was initially planned in phases. However, when the opportunity to launch cross-platform simultaneously was suggested, Barwise's team was enthused: "It's

certainly a more pressured experience, aiming for a cross-platform launch, and it's a fairly unusual thing to do in mobile gaming. Most studios will test on one platform, release on that and take advantage of the increased userbase to iron out any final bugs before moving on to other devices.

"Our approach meant we were testing on three different operating systems simultaneously, but the tools helped us

“Our designers were able to iterate upon content alongside the engineers, getting us to the ideal gameplay quickly.”

Mike Barwise, Marmalade

debug effectively across all of our target devices. Writing the game in Lua was a plus to the design team too, as they were able to iterate upon content alongside the engineers, getting us to the ideal gameplay quickly."

This simultaneous cross-platform approach is something console developers are lots more familiar with, says Barwise: "One of the strengths of mobile development has historically been the ability to build a hit game over time, without having to focus on one immovable launch deadline, but there are definite advantages to a more traditional console model of release. Launching multiplatform gave us something unique to draw attention to the game, including some national media

coverage, and the single release date was a strong rally point for marketing activity. It's also great to know everyone can play our game, regardless of the device they're using."

SPACE TO SUCCEED

In particular, launching on BlackBerry gave the game an opportunity to shine on the less-congested BlackBerry World store. This made *Signal to the Stars* a highlight of the week, encouraging BlackBerry to feature the game on the front page of the store.

According to Massimo Caporale, Marmalade's head of content: "It's impossible to overestimate the value in being a featured title on an app store. *Signal to the Stars* was able to stand out in a way that it may have struggled to on the more heavily subscribed stores like Google Play or the Apple App Store. We've found working with BlackBerry to be extremely effective in terms of getting our games in front of consumers."

With *Signal to the Stars* now out in the wild, Barwise considers his team to be ready for more Lua-based projects: "It didn't take long to get the team up to speed on Marmalade Quick, and I'm confident that the next project will be even smoother, or maybe just more ambitious! We've been really encouraged by the download figures on BlackBerry so far."

Developers looking to target BlackBerry devices as part of a cross-platform strategy would be well placed to investigate Marmalade's upcoming BlackBerry offer. Indies who sign up and submit an app made with Marmalade to BlackBerry World will qualify for a year's free Marmalade SDK Indie licence, and could also qualify for a free device to test on. To find out more take a look at

www.madewithmarmalade.com/blackberry

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RECRUITER HOT SEAT

Donna Black, senior recruiter at Candy Crush Saga maker King, invites you to join its rapidly growing empire

What makes King different from other development studios?

What makes King really unique is that we have everything within the company; we are a games studio, publisher and distributor. We're everything. We own the entire chain when it comes to producing a game. That way we can take all the decisions related to it and set our own agenda.

We also have a mature leadership with a flexible approach to work-life balance. Since we have control over the entire process, we can adapt and manage without burning out our staff. We work hard when we are at work, but we also cherish the time with our family and friends.

King also offers truly international career opportunities, with studios in Stockholm, Malmö, London, Barcelona and Bucharest.

How many staff are you currently looking to take on?

We are hiring across all our studios and are looking for talented developers, graphics, producers and business intelligence experts to join us in making great games. We are planning to continue growing our teams for the rest of 2013. We're particularly looking for talented games developers, especially those working with C++ or Flash. It's an exciting environment for our technical people with Hadoop clusters, immense scalability, agile teams, fast shipment, short projects and instant feedback. Above all, it's about working together and having fun as part of a team that's growing at an awesome rate.

What perks or privileges are available to staff working at King?

We feel what we are doing at King is the most exiting work being done in the industry right now. We can offer the opportunity to work on amazing games, like *Candy Crush Saga*, *Pet Rescue Saga* and *Farm Heroes Saga* – some of the most popular and fun games to play in the entire world.

Beyond that each of our studios has its own competitive package – and I guess the biggest perk right now is that entire company is flying to Dubai [in May] to celebrate King's tenth anniversary and recent success.

What should aspiring developers do with their CV to get an interview?

The CV should be short and to the point. Bullet points are good, paragraphs are bad. We have a high volume of CVs to read, so when things are clear it makes it a lot easier for us. Be well prepared and, naturally, play our games before coming to the interview. Above all, be yourself though – the culture fit for us is just as important as the skills you can bring to King.

Who is the best interviewee you have ever had, and how did they impress you?

We were very impressed by a person who had played our games, and beat all competition. We thought initially that he might be cheating in some way, so we monitored him extra carefully. We later invited him to the office to demonstrate his skills, and in interview he really stood out from everything we had seen before. We were so impressed



GET THAT JOB

Development specialists offer advice on how you can bag that career leap

THIS MONTH: **GAME DESIGNER**

"Designers are the glue that holds together the vision of the game and bring together ideas of the team. To do this, a few key things need to be a part of their character."

"Make a game. Creating a game from scratch, including the art, code and audio, gives a designer the empathy and knowledge they need to interact with different individuals within a team."

"Know your role. Game design is a broad subject with lots of specialisms. Knowing whether you're a narrative, level or systems designer is key to lining yourself up for a role."

"Be memorable. The games industry is a competitive place; you need to stand out from the rest. So be different, be interesting and be memorable so you're the one at the top of the list."

Jim Sweatman,
Senior Game Designer for RuneScape, Jagex



SIX-SECOND STUDIO SPOTLIGHT



■ Red 5 Studios is a Southern California studio founded in 2005 to create the next step in free-to-play PC games

■ Its first title is MMO shooter *Firefall*, currently in closed beta

■ The studio is led by seasoned developers Mark Kern, the team-lead for vanilla *World of Warcraft*, and Scott Youngblood, the lead designer of *Tribes* and *Tribes 2*

■ Red 5 is designing *Firefall* from the ground up with the players at its core

■ It's currently home to over 100 employees, and is recruiting

■ Red 5 recently opened a European HQ in Ireland

www.red5studios.com



BIO

Name: Donna Black
Title: Senior Recruiter
www.king.com/jobs

that we hired him on the spot. He is still with the company, making a great contribution to our ongoing success.

“ We are planning to continue growing our teams for the rest of 2013. We’re particularly looking for talented games developers.”

Donna Black, King

And who was the worst?

While in our offices, a candidate answered a call from a recruitment agency and booked an interview for later in the week with another company. I guess it goes without saying that they were not successful with King.

What advice would you give for a successful interview?

It might sound weird, but don’t come too early. Our schedules are often back to back with meetings, so it’s rare we can start an interview early, but of course we still feel bad keeping someone waiting anyway. You don’t want the first impression you give to an interviewer to be guilt, but also don’t be late.

If your studio has recruited talent internationally, what was the process like for you and for the interviewee?

We are increasingly focusing on

international recruitment lately, particularly in Stockholm and Malmö.

We’re currently working on an attraction campaign across 22 countries to bring the best games developers in the world to King.

It’s important when relocating that people consider what they really want out of the move, and what’s best for their family, which we support with a preview trip during the interview process. And once a candidate is on board, we do what we can to make them feel at home. As well as a thorough induction, a competitive pay package and great benefits, they will enjoy a generous relocation package that covers every last detail, from schools to housing assistance.

How have your recruitment needs changed in the last 12 months?

Our recruitment needs are constantly evolving. A year ago we launched *Candy Crush*, and now it is one of the most popular games of all-time. We have to adapt on an almost weekly basis and make sure we grow. We have had to develop a plan to exponentially increase the volume of our hires, without sacrificing any of the quality.

Finally, in your opinion, what area of the games industry recruitment needs more ‘investment’?

Without a doubt a graduate program within companies. As an industry, we lose a huge number of extremely talented young developers coming out of university because there aren’t opportunities in the studios, and other areas, for junior talent.

NEW STUDIO ALERT!

TAKE ONE LOOK at *Strike Vector*, a richly detailed aerial combat game powered by UDK, and you wouldn’t think that it’s the product of a four-man team from Paris.

Programmer Cedric Lecacheur (*fourth from left*) and his compatriots, Jeremy Chaïeb (*first*), Pierre-Etienne Travers (*second*) and Paul Chadeisson (*third*), have all previously worked on large PC and console projects at studios in the UK and France, including Quantic Dream, Sony Studio Liverpool, Nadeo, Lexis Numerique and Vivendi Universal Games.

“We are all self-taught in many disciplines,” Lecacheur tells *Develop*. “As an example, one of the coders has done much of the visual effects and the two

artists – former concept artists – only started learning 3D modelling and animation two years ago.

“Hard skills are our main focus and strength. The game design part is based on practice and instinct rather than theory. We also look to design a game that pleases us before a game that seeks to reach a wider commercial audience.”

Right now, Lecacheur and company are busy finishing *Strike Vector* for PC, but he assures us that “there are lots of gameplay ideas in the cupboard”.

“Anyway, we don’t intend to grow too fast nor too much,” he says. “Because our main concern is to keep total independence while making games.”

www.strikevector.net



MOVERS AND SHAKERS

This month: Marmalade, Lionhead, Climax, 5th Planet Games



MARMALADE ■ HARVEY ELLIOTT

(left) has been promoted to CEO of Marmalade, moving up from his previous role as MD and COO.

He succeeds from Niall Murphy, who remains in his position as an investor in the company, and will continue to act in an advisory capacity.

Elliott's new role will see him taking overall leadership for all of the UK technology maker's business interests, including the award-winning Marmalade SDK, Marmalade Game Studio, Made with Marmalade publishing and software services.

"I'm thrilled to be taking on a broader role in guiding Marmalade through the next exciting period of growth," Elliot told *Develop*.

"Niall has been a great leader for Marmalade over the past three years and I look forward to building on the excellent foundations that he has put in place. With so many emergent platforms in the mobile, tablet and TV markets, and great innovations from the established leaders, the Marmalade solution becomes more and more compelling for developers."

In addition to Elliott's promotion, a new starter at Marmalade is former

head of production at Rebellion, **MICHAEL BURNHAM** (right), who is heading up the internal studio at the games and software company.

Burnham will be overseeing development of cross-platform mobile titles at Marmalade Game Studio, including both internally-held IP and external projects.

"My role here at Marmalade allows me to expand the games side of the company and take advantage of the existing Marmalade SDK tech to deliver great games across multiple platforms," said Burnham.



LIONHEAD ■ JOHN NEEDHAM

has been named as the new studio boss at Microsoft-owned developer Lionhead. He's the former CEO of both

Cryptic Studios and Gazillion Entertainment, and has been hired for his expertise in MMOs, subscription models and free-to-play.

"This is a historic time in our industry and I'm excited, and honoured, to be joining Lionhead and Microsoft Studios," said Needham. "Our vision is focused on building innovative gaming services and triple-A experiences at Lionhead, and the rest of Microsoft Studios, which take advantage of Microsoft's incredible hardware and software platforms. Personally, I can't wait to get started."

Microsoft's entertainment corporate VP Phil Harrison added: "It's my pleasure to welcome John Needham to Microsoft Studios and Lionhead. He brings a wealth of proven executive leadership experience in the online gaming space to the company and I know he will confidently lead Lionhead towards an ambitious online future."



CLIMAX ■ Climax Studios has appointed industry veteran CHRIS EDEN as its new business development manager.

Chris has over 20 years worth of industry experience under his belt and joins Climax from the Sheffield-based Sumo Digital, where he worked for three years.

"I'm delighted to be returning to Climax, the studio has always been close to my heart and when the opportunity came to rejoin the company I jumped at the chance," said Eden. "Simon and the team have an exceptionally talented, world-leading studio and I hope I can contribute to their continued success, in an era when we seem to be beset by stories of doom and gloom for UK developers. Climax continues to act as a showcase for the best of British development."

As well as working at Sumo and SCEA in business management roles, Eden has previously served as a

designer, technical manager and games programmer.

Climax CEO Simon Gardner added: "Chris joins us from Sumo Digital and has over 20 years experience within his field. He has previously worked at SCEA in developer relations and devised and launched the Sony Pub Fund. Way back in the distant past, Chris worked for a young company called Climax – and we are pleased welcome him back to the fold."



5TH PLANET GAMES ■ Inside Social Games lead writer MIKE THOMPSON has joined free-to-play social and mobile developer 5th Planet Games as creative writer.

In his new role, he will be responsible for developing storylines and writing the narrative for the studio's upcoming titles.

"We could not be more excited to welcome Mike to the 5th Planet team," said CEO Robert Winkler. "His knowledge of the industry is incredible, his writing skills top-notch, but it was his passion as a gamer that really let us know he was the right person for this critical role."

Thompson added: "I am proud to help carry on the 5th Planet Games tradition of developing core games that are not only fun to play but captivating to read as well."

Service & Tech Recruiter Hot Seat

Havok's technical recruiter James Byrne on why a career in middleware can be a satisfying move

What makes Havok different from other middleware companies?

Havok is exclusively a middleware company, which means the work we do has a very strong customer focus. Unlike some other middleware providers, we have a broad portfolio of products and wide range of supported platforms, from next-gen consoles right down to mobile. That leaves our team with plenty of interesting and challenging work.

What benefits do you offer staff?

Havok have a very strong benefits package, including private health insurance, retirement planning, bonus, life and disability insurance, travel insurance and generous vacation. We offer great perks, such as gym subsidy, console subsidy, free video games and lots of parties. We

also provide generous relocation packages and hands on assistance to new employees moving city or country to join Havok.

What opportunities are there for career progression?

We operate a very flat structure internally in Havok and engineers are given a lot of autonomy and responsibility. They will have opportunities to work on multiple products, on different hardware platforms, in many of our global offices, and with a number of customer studios.

What advice can you give for a successful interview?

Show how you understand and solve difficult problems, and dig into very specific technical details.

Why should developers follow a career in middleware rather than games development itself?

It is quite unique working in a middleware company; as an engineer, your code will typically be seen by a broad audience. You are exposed to more hardware platforms and see more codebases than you typically would working for a single games studio. We have a regular release cycle, and are not subject to the long periods of crunch sometimes associated with games studios.

And how is Havok changing?

We are continually evolving. We have just completed the rewrite of our flagship product. At GDC, we gave away software for free (*Project Anarchy*, see page 4), and, as always, we are working closely with our

customers on launch titles as we head towards another exciting console cycle. We are hiring right now, come and join our team. Candidates can visit our website or email jobs@havok.com for full details.

www.havok.com/careers





Climax Studios

Portsmouth, UK
www.climaxstudios.com

Located immediately on Britain's south coast, Climax staff need only glance out of the window to spy cruise ships and fishing boats. Within, a whole open-plan office houses much of its games team.



THIS IS **WHERE WE WORK**



Goodgame Studios

Hamburg, Germany
www.goodgamestudios.com

Goodgame claims to be the only games studio with a swimming pool. Other comforts for its F2P games makers include a huge kitchen and leisure area, and at least two foosball tables.



SERVICES SPOTLIGHT

This month: **Plastic Wax**

PLASTIC WAX IS a digital effects production house.

Since 1998, it has been creating visual effects, computer-generated cutscenes and in-game animations for video games and film.

"We like to use the buzzword that we're a 'turnkey solution', which means we can effectively take care of a client's entire in-game or pre-rendered animation pipeline," Plastic Wax executive vice president Dane Maddams tells *Develop*. "We do this cost-effectively, and of an extremely high quality for a price point which generally is not feasible with an in-house solution."

"This doesn't mean we replace a pre-existing in-game animation team; rather we work with your pre-existing solution and accommodate whatever is needed."

For in-engine animation cutscenes, Plastic Wax has created an exhaustive list of work for titles such as: *BioShock Infinite*, *Saints Row: The Third*, *Darksiders 2*, *Epic Mickey 2* and *Tomb Raider* to name a few. Generally these projects involve 50-plus minutes of in-game, in-engine cutscenes,

Maddams tells *Develop*. In addition to that, Plastic Wax also specialises in cutting-edge pre-rendered computer-generated imagery, of which it recently created high fidelity CG cutscenes for *Civilization V*, the new *Neverwinter Nights* MMO, *Darksiders 2*, *Fallout: New Vegas* and *Transformers*.

"We do this cost-effectively, and of an extremely high quality for a price point which generally is not feasible."

Dane Maddams,
Plastic Wax

The digital production outfit uses Maya and 3ds Max for its general workflow. Modelling is primarily performed in ZBrush, Photoshop is its package of choice for texturing, while Nuke is used for compositing. It also has an in-house motion capture facility, which allows it to capture any



Plastic Wax has worked on CG cutscenes and artwork for many games, such as *Epic Mickey 2* (above)

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“Our clients, quality and communication are paramount elements to our production pipeline.”

Dane Maddams,
Plastic Wax

Some of the marketing work it has undertaken includes cover art and high resolution stills for *Mafia II*; cover art for Eidos' *Tomb Raider: Legend*. And its TV spot services have been used by 2K Games and Sanyo.

Presently, Plastic Wax has been enjoying repeat business and hopes to continue working on games titles with "awesome people".

"Our clients, quality and communication are paramount elements to our production pipeline," says Maddams in closing. "We are also a highly creative and highly skilled team of artists who have been privileged enough to work on some of the most prolific titles in gaming, and we offer solutions which are competitive, of high quality and are easily integrated into clients' pre-existing pipelines."



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TOOLS SPOTLIGHT

This month: **New Life Interactive**

GAME BLOCKS IS pitched as a gateway drug for aspiring games developers. It was originally created for a creative writing class at the University of Texas, and aims to be the simplest possible learning environment for new and non-technical games designers.

The man behind the toolkit is Sheldon Pacotti, principal writer on the first two *Deus Ex* titles and president of New Life Interactive.

Pacotti (*far right*) founded New Life in autumn 2008 as a vehicle for creating experimental games, specifically based on the massive parallel processing of microcomputers. Its first title, *Cell: emergence*, explored the gameplay possibilities of 'dynamic voxels' – volumetric pixels that respond to game state, in addition to containing visual information or data.

"In contrast to modding tools or hobbyist tools built around a specific game type, Game Blocks gives new developers the full expressiveness of game code," Pacotti tells *Develop*. "Games are built with Lego-like coloured blocks, which allow even first-time programmers to realise their own game ideas. Though it provides basic

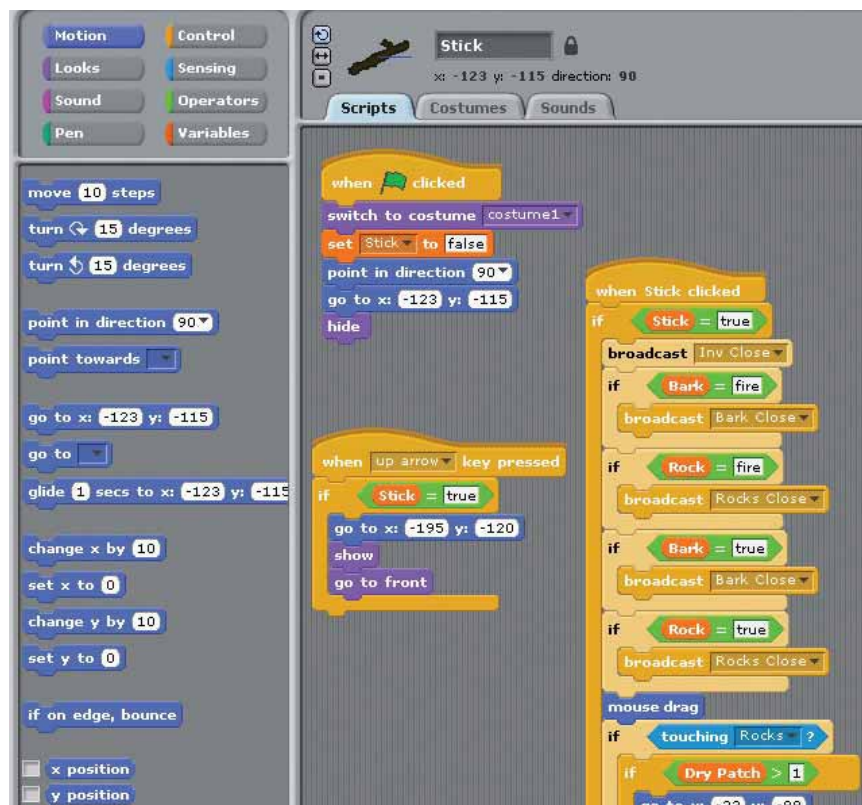
building blocks for common game types such as RPGs, the user retains complete flexibility in how those elements are combined, because the toolkit runs within the BYOB visual programming environment."

Game Blocks is primarily an educational toolkit, and has been used

“What I would really like to see is greater attention paid to the computer as a content creator or content collaborator.”

Sheldon Pacotti, New Life

in dozens of student projects to date, although no commercial products as yet. However, it did make an appearance at the opening party of SXSW Interactive in Austin, Texas, as the technology behind a voting interface inspired by the classic *Lunar*



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Images courtesy of Criterion Games

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Paul Ross, CTO, Criterion Games

"After some years working as a programmer, I decided to attend the MSc in Games Programming at Hull University. It was probably the best investment of my life. Now I'm a programmer at an AAA studio."

Manuele Bonanno, MSc Graduate

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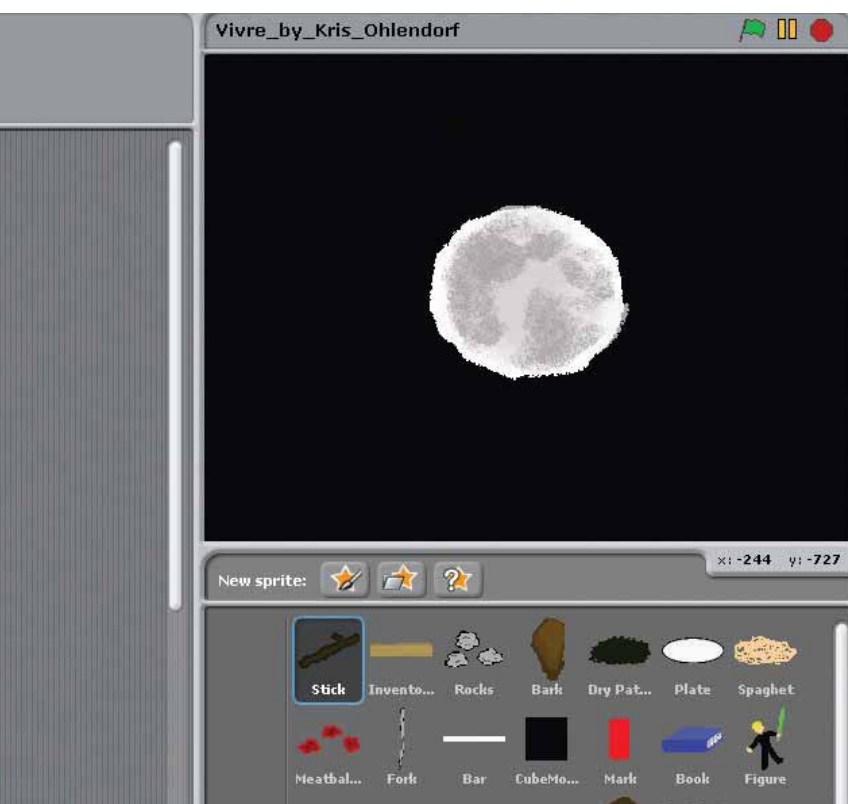
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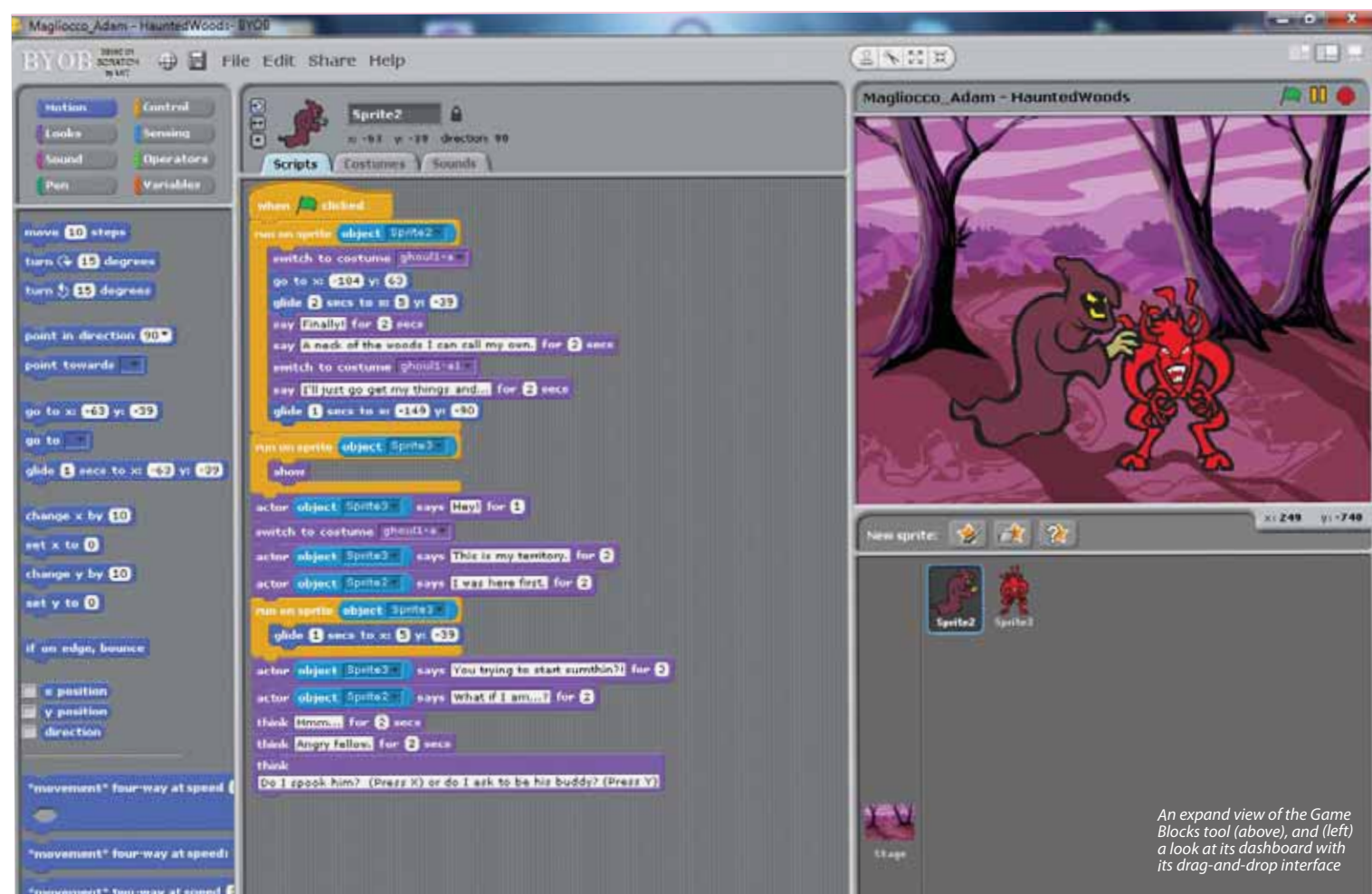


Lander video game. Its simplicity allowed Pacotti to create a complete game in a couple of hours to realise a last-minute suggestion to poll the attendees on whether they thought the Wink robot companion was 'Creepy' or 'Cute'.

New Life's current focus is on porting Game Blocks to the new version of BYOB, called Snap!, which it expects will offer huge performance gains. Pacotti anticipates new features to continue to emerge each semester from the video game writing class he teaches, and a new revision to the toolkit may appear roughly twice a year. For instance, blocks related to platforming gameplay could be expanded, he suggests, and would also like to see the underlying coding environment (BYOB/Snap!) evolve to support commercial games, though that's in the hands of the computer scientists at UC Berkeley.

"I would love to see the barriers to entry into video games continue to come down. What I would really like to see is greater attention paid to the computer as a content creator or content collaborator," Pacotti says. "Big

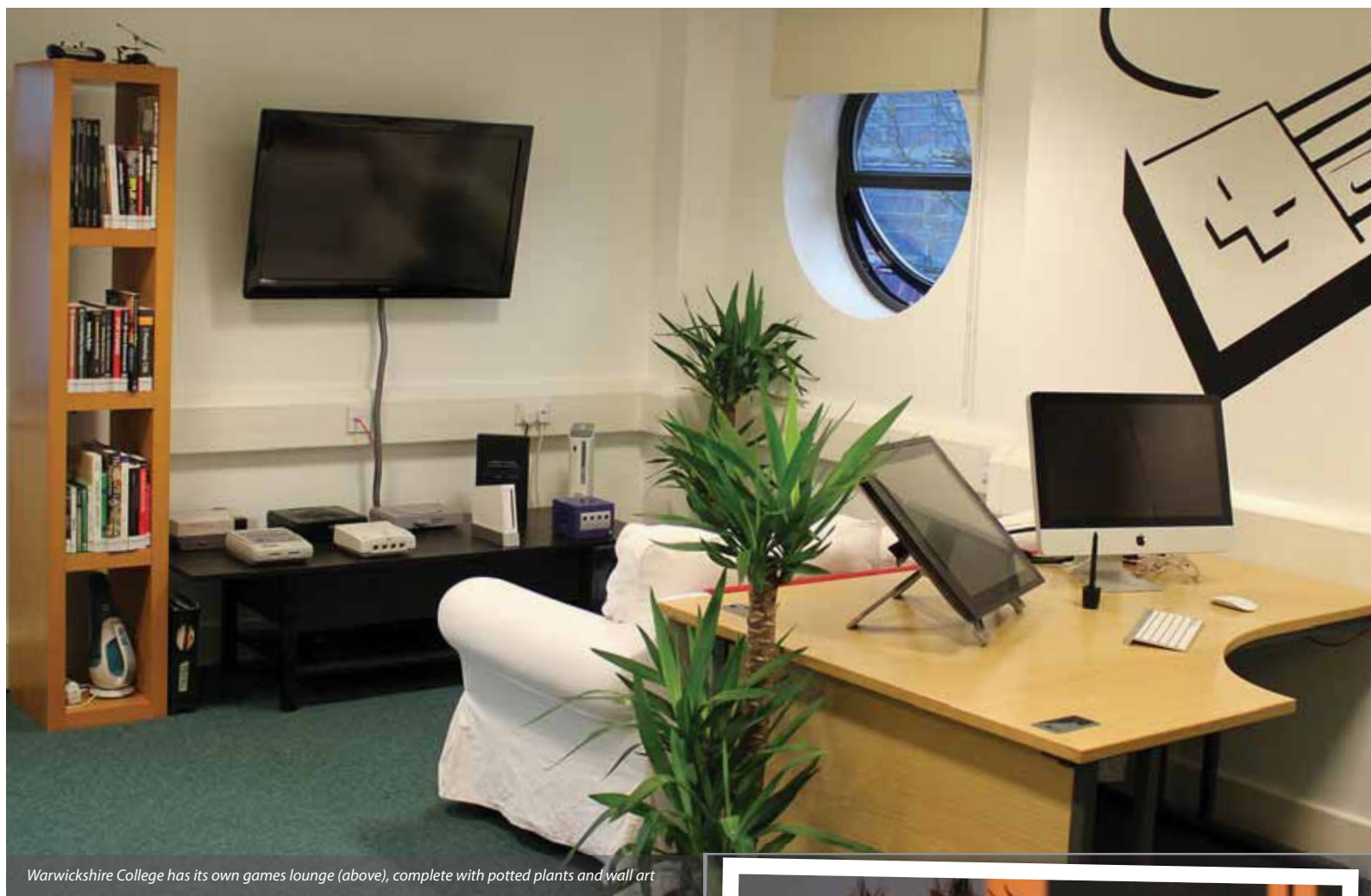
studios can afford to have teams of artists in cubicles fine-tuning every polygon of every model in a game, but I think an indie studio might be better served by an MMO-style character creator, for instance, which could provide a wide possibility space of character models, all correctly rigged and textured. Tools like that could open the door for games that are 'indie' but also relatively high fidelity."



An expand view of the Game Blocks tool (above), and (left) a look at its dashboard with its drag-and-drop interface

TRAINING SPOTLIGHT

This month: **Warwickshire College**



Warwickshire College has its own games lounge (above), complete with potted plants and wall art

GAMES DEVELOPMENT IS close to Warwickshire's heart, thanks to the studios that have established themselves in the Leamington Spa area. What separates Warwickshire College's games course from others is the contact time students receive, course leader for Foundation Degree Games Arts Mike Acosta (*right*) tells *Develop*: "Being a higher education course, our highly selective recruitment process enables our students to receive a more intensive, one on one learning experience at the college.

"As tutors, we are also afforded more contact time with each student than a traditional university environment. We offer a learning experience that complements the latest in industry software with a core art foundation skill set."

Acosta adds that the course also benefits from being located within a hotspot for games development. There are a dozen or more studios within close proximity to what some now call 'Silicon Spa'. All course modules themselves are designed with advice from the industry,

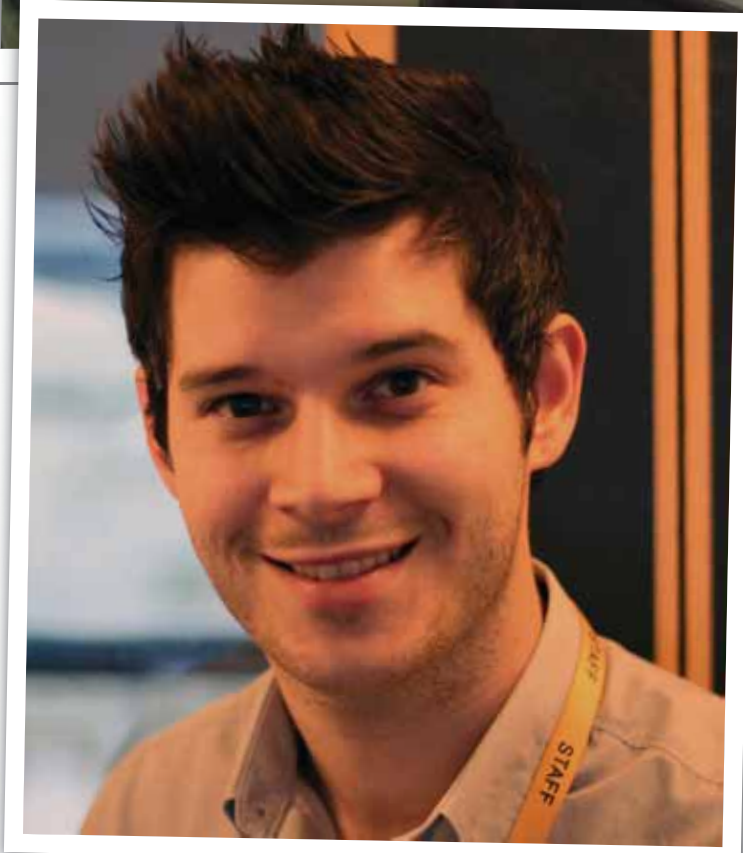
which Acosta believes makes the course "fully industry specific". In some cases, briefs are designed by particular games studios such as the 3D modelling component advised by Blitz Games

We offer a learning experience that complements the latest in industry software.

Mike Acosta,
Warwickshire College

Studios or the concept art brief set up with Kwalee.

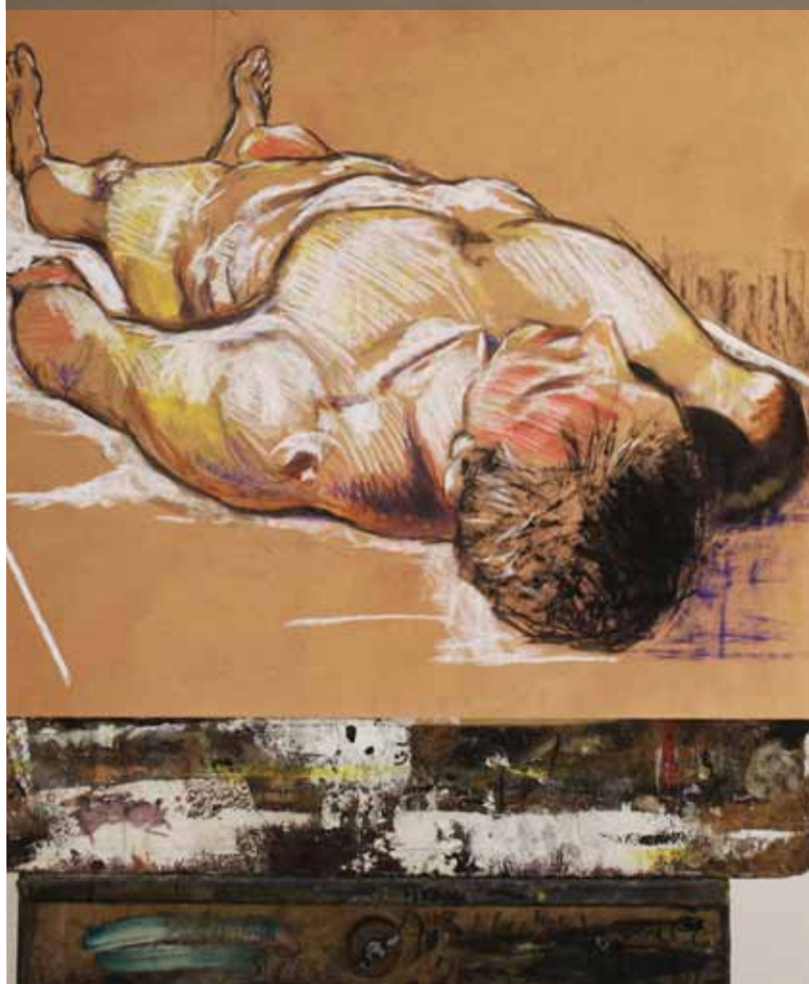
Warwickshire has secured relationships with seven different games studios that have each offered significant areas of assistance in designing and developing the course. Acosta explains that three studios in



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A life drawing by one of Warwickshire's students (below)



particular have acted as mentors to both students and staff by presenting talks, which they were happy to accommodate on campus. Codemasters has also provided work experience to students, allowing them valuable first-hand knowledge of development.

“Our aim is to be seen as a centre of excellence across the industry, using our status to raise interest from gaming representatives.”

Mike Acosta,
Warwickshire College

As for equipment, the studio is equipped with high-spec PCs, each with dual screens and graphics tablets. And industry standard software such as 3ds Max, Maya, Mudbox, Unity, Photoshop

and Marmoset are all used in production. iMacs and iPads are also used in the studio to develop content for iOS.

Students who have completed the level three component of the course have secured work with both Blitz Games and Codemasters. Acosta says this has set a challenging benchmark for its level four students to meet.

For the future, Acosta endeavours for his course to remain a pathway into games development for the best students in the country.

“The selective nature of our recruitment process will continue to attract the very top calibre of students across the country, with a focus on an increase in work quality as opposed to student numbers,” he says.

“We are also looking to build on the relationships we already have with games studios while attracting even further attention from both local and national organisations. Our aim is to be seen as a centre of excellence across the industry, using our status and location to raise interest from the world’s most respected gaming representatives.”

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THE FAQ PAGE: PALMER LUCKEY

Develop grills respected figures from the global games industry

Who are you and what do you do?

I am a virtual reality enthusiast, the founder of Oculus VR, and the designer of the Rift. I work on creating next generation virtual reality products.

What are you working on right now?

The consumer version of the Oculus Rift. We already launched our developer kits, but there is a lot to do between now and the consumer launch.

What was the first video game product that you ever worked on in the industry?

The Rift is the first thing I have worked on in the games industry, aside from my short-lived attempts at being a games programmer. It turns out I am a bad programmer.

What was the first video game you ever played, and did you enjoy it?

It might not be the very first, but the first I remember was playing *Descent II* when I was

about four years old. I enjoyed it once I wrapped my head around 6DOF controls.

What was the most recent video game you ever played, and did you enjoy it?

BioShock Infinite, and what a masterpiece. A lot of people on our team made a pact that we would not play it until we got back from GDC; we would not have gotten any work done otherwise.

What is your favourite game ever, and for what reason?

Chrono Trigger: brilliant story, beautiful soundtrack and memorable characters.

“The Rift is the first thing I have worked on in the games industry, aside from my short-lived attempts at being a games programmer. It turns out I am a bad programmer.”

How many hours a week do you spend playing video games?

It depends on the week. I try to put in ten to 20 hours, but sometimes work makes it impossible. Prior to Oculus, I generally played at least 40 hours a week.

What area of the industry do you feel needs more ‘investment’?

I am a bit biased, but I think that virtual reality gaming is something the industry should really be investing in.

There is only so far you can take traditional games. Even if you don't think today is the day that virtual reality will go mainstream, it is worth getting ready for when it does.

What do you enjoy about the video games industry today?

PC gaming is enjoying a huge comeback, and digital distribution is advancing on every platform. I love not worrying about losing my discs or licence keys.

And what disappoints you about the video games industry today?

It used to be that a game could introduce highly complex play mechanics that took a lot of skill to master and still be successful. Even if the game was not innovative, they were generally harder to beat and took a higher skill level. *BioShock Infinite*'s '1999 Mode' rebalances the game to feel more like it would have had it been made back then.

Of all the games you have worked on, which has been your favourite to work on?

The extent of my games development experience is extremely limited. I did a *Pokémon* ROM hack years ago that I was pretty proud of, but never released publicly.

What game that you were not involved with would you most liked to have worked on?

Dactyl Nightmare.

What other video games developer do you most admire?

John Carmack. He is a wizard of hardware and software alike; very few people are on the same level as him.

What hobbies, collections or interests do you have that are completely unrelated to video games?

Hypermiling, competitive dinghy sailing, lasers, Bitcoin, high-end audio, barefoot running and debate.

What is your favourite book, movie, TV show and album of all time?

Favourite book is *Twenty Thousand Leagues Under the Sea*, favourite movie is *V for Vendetta*, favourite TV show is *Firefly*, and favourite album is *Valley of the Damned*.



Palmer Luckey, who once made a *Pokémon* ROM hack that never saw public release



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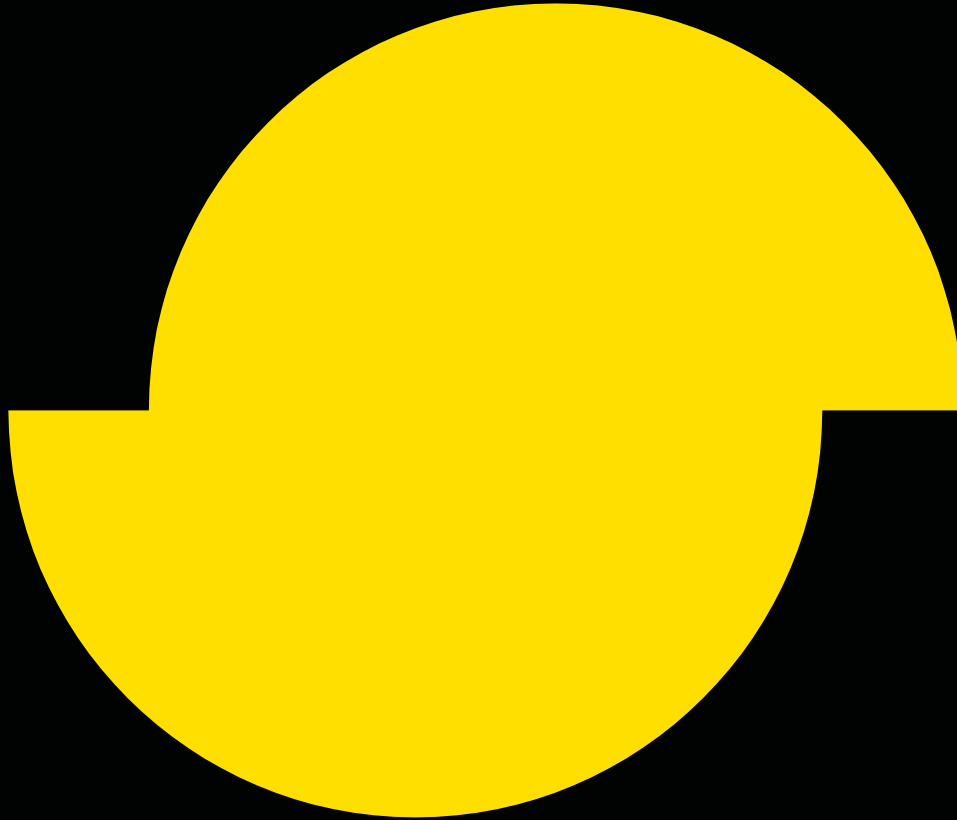
A person is seen from the side, sitting at a desk in a dimly lit room. They are using a large Apple iMac computer that displays a digital audio workstation (DAW) interface. In front of the computer is a professional audio mixing console with numerous knobs, sliders, and buttons. The person's hands are on the mixer. To the right of the mixer is a video game controller. A pair of large headphones is also visible on the desk. In the background, there are studio monitors and another computer screen. The overall atmosphere is that of a professional music production environment.

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